DECEMBER 26, 1931

Railway Age

FOUNDED IN 1856

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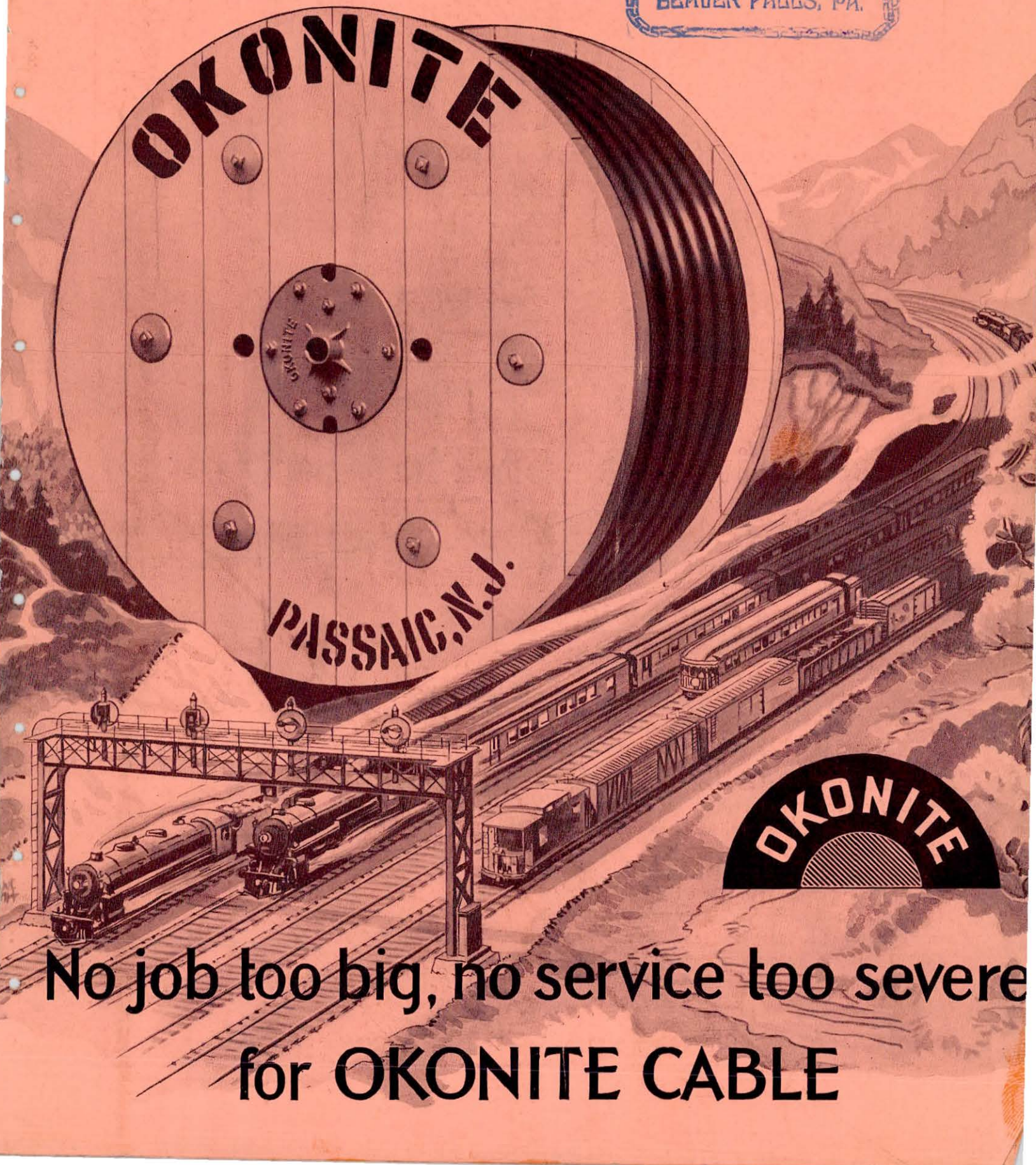
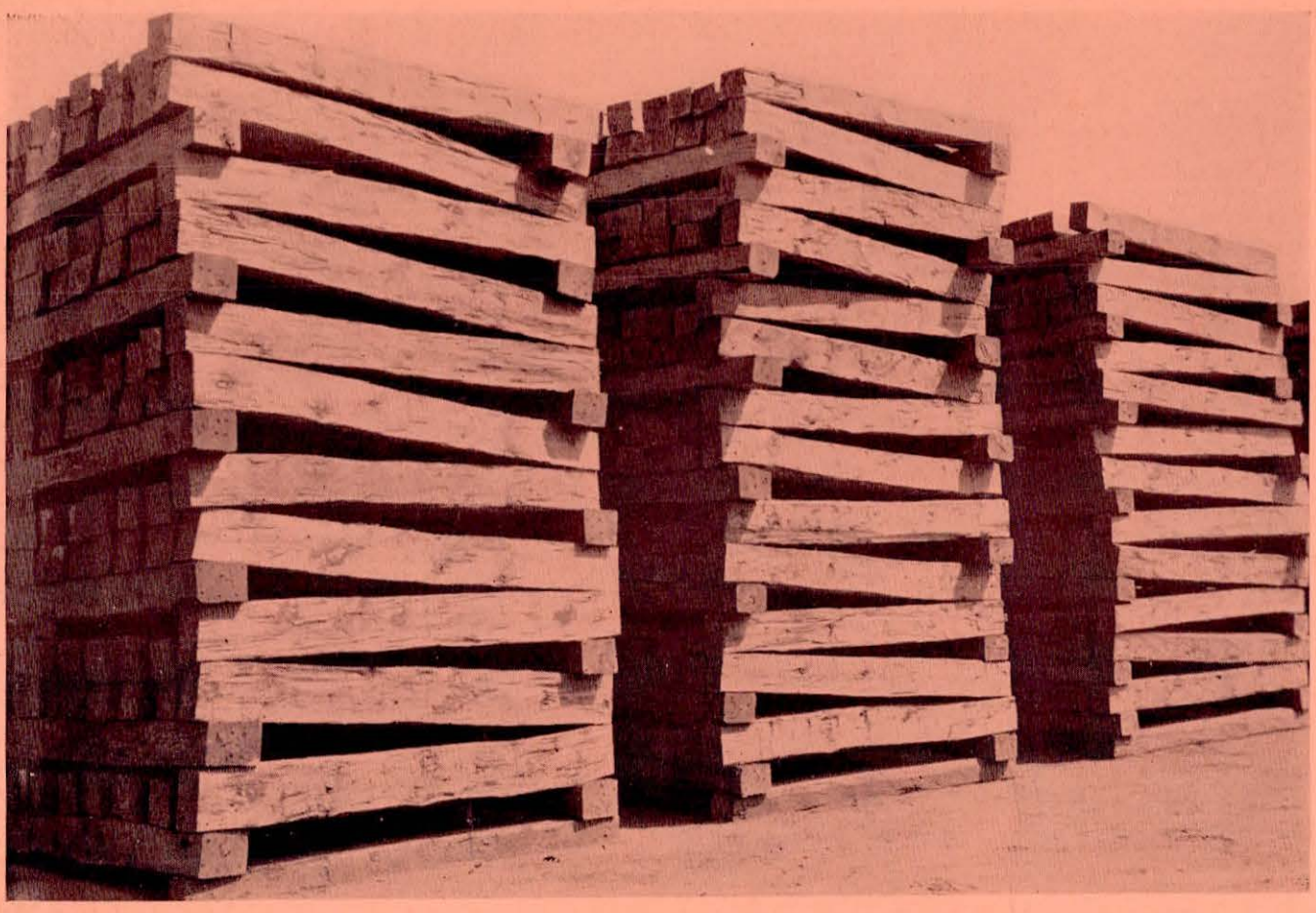


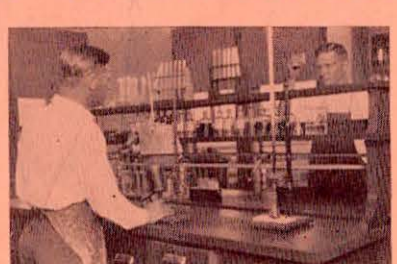


Expenditures for Tie Treatment Return Big Gains in Net Revenue

THERE are few, if any, railroad expenditures which show such big and definite savings as timber treatment. For example, the average number of crossties renewed per mile on 200,000 miles of maintained track has declined from 259 per mile in 1916 to 183 in 1929—a decrease of nearly 30 per cent. This indicates a present annual saving for these roads of more than 15,000,000 ties, and for all the roads in the United States and Canada of at least 30,000,000 ties.

Such a saving constitutes an economy of the first magnitude. Some roads which have been consistent users of treated ties have reduced their renewals to 74, 86, and 91 ties per year. Despite these remarkable records, however, there are some railroads still renewing as many as 278, 274, 249 ties per year. These high renewals place a heavy burden on maintenance costs and are a big drain on net operating revenue, for it costs on an average of $275.00 per year for every extra 100 ties inserted in track per mile. Remove this heavy burden by using *International* high quality ties regularly.

Sound Timber
Plus
Accurate
Chemical
Treatment



You are then certain to receive the full benefits accruing from treated ties. *International* ties contain a full measure of sound, decay-free timber *(see above illustration)*. After being properly seasoned under technical control on vegetation-free storage yards, they are scientifically treated with the best grade of creosote oil. *International* ties assure maximum return on expenditures for crossties and their treatment.

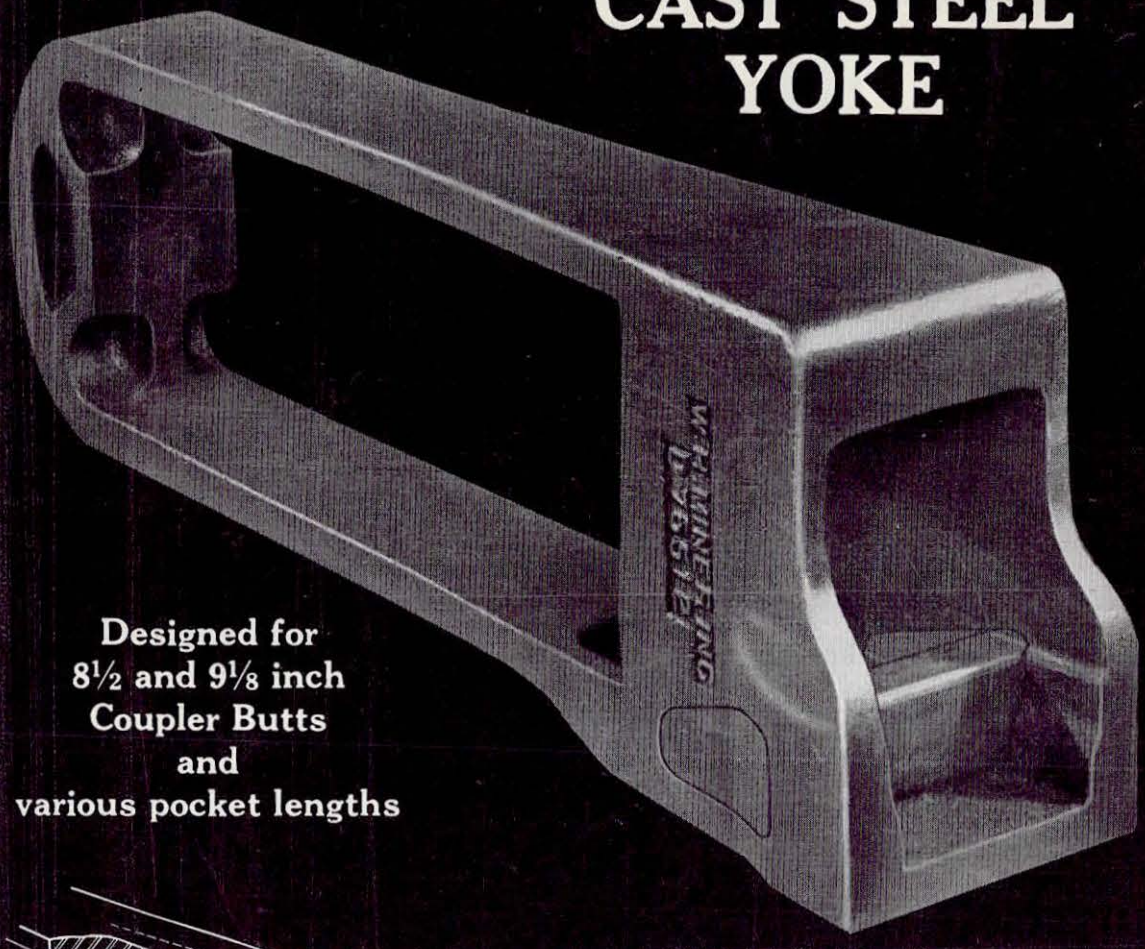
International
CREOSOTING & CONSTRUCTION CO.
PRODUCERS OF HIGH GRADE TREATED TIES
Galveston - Beaumont - Texarkana

ALWAYS A STANDARD A.R.E.A. SPECIFICATION TIE

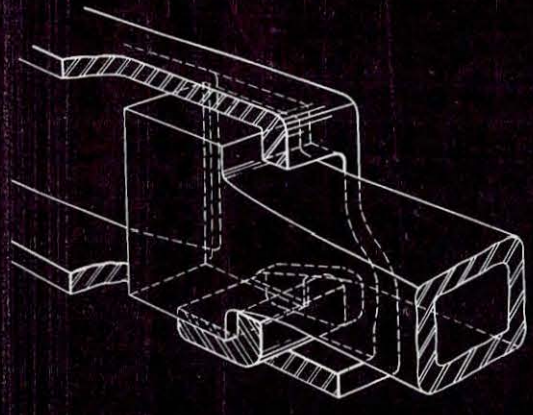
Published weekly by Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa. Entered as second class matter, March 9, 1928, at the Post Office at East Stroudsburg, Pa., under the act of March 3, 1879.
Address communications to 30 Church St., New York City.

MINER

CAST STEEL YOKE



Designed for
8½ and 9⅛ inch
Coupler Butts
and
various pocket lengths



No alteration of coupler necessary

This dependable connection does away with the obsolete and troublesome riveted yoke, thus terminating a costly maintenance item which is peculiar to many thousands of existing cars.

W. H. MINER, INC. CHICAGO

Made to Match Their Reputation

A product can be made to sell—usually at lower prices—or to sustain a reputation it has held for many years. "Railway" Steel Springs, Tires, Wheels and Journal Box Lids are made to meet all possible requirements while upholding the reputation that has made the "Railway" mark a "buy-word" among railway purchasers.

Railway Steel-Spring Company

30 CHURCH ST., NEW YORK

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office

Vol. 91 December 26, 1931 No. 26

In This Issue

Dollars Spent for Treated Wood Are Returned Manifold . . . . . Page 966

The twenty-fifth and final article in the Operating Economy Series, in which is pointed out how the savings realized by preserving ties have been responsible for the growing use of impregnated timbers for many other purposes.

The Problems and Possibilities of Railway Research 969

C. T. Ripley, chief mechanical engineer, Atchison, Topeka & Santa Fe, outlines the importance to railroads of thorough research work, and describes in detail how such work is carried out on his system.

Bureaucracy's Increasing Power Threatens Private Ownership . . . 977

The recent growth in regulatory strength and zeal constitutes a menace to both railways and their patrons, which can be overcome by co-operative action, according to E. A. Jack, traffic manager, who offers a plan for such mutual activity.

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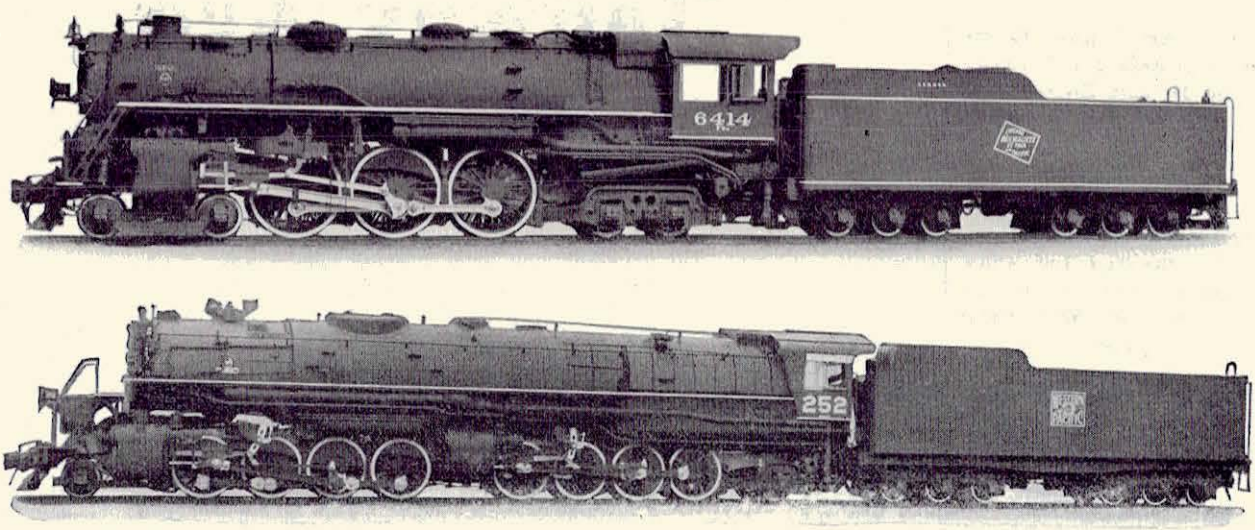


The 4-6-4 type illustrated is a modern fast passenger locomotive.

The 2-8-8-2 type shows a modern freight hauler for heavy grade service.

Revenue Earning Power

THE efficiency of a manufacturing plant depends upon its equipment. Success cannot be achieved with antiquated tools, even though experts be employed to operate them.

A railroad is no exception. It manufactures transportation, and its locomotives, cars, tracks, signals and a vast complement of other equipment, constitute its tools. The fitness of these tools for the work to be done largely determines the efficiency with which the plant operates.

Many railroads are today demonstrating that—

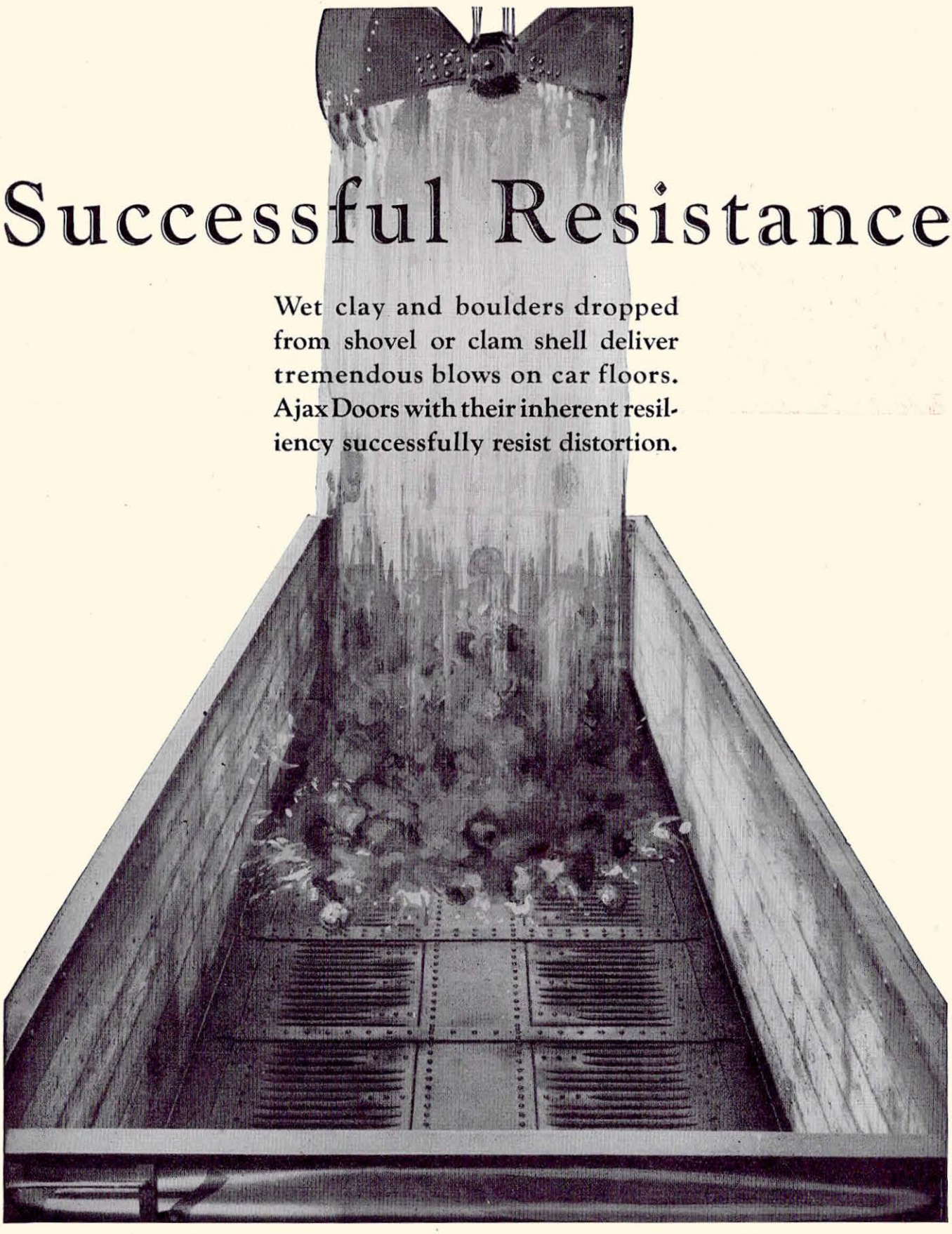
It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS 1831 1931

THE
BALDWIN
LOCOMOTIVE WORKS
PHILADELPHIA

Successful Resistance

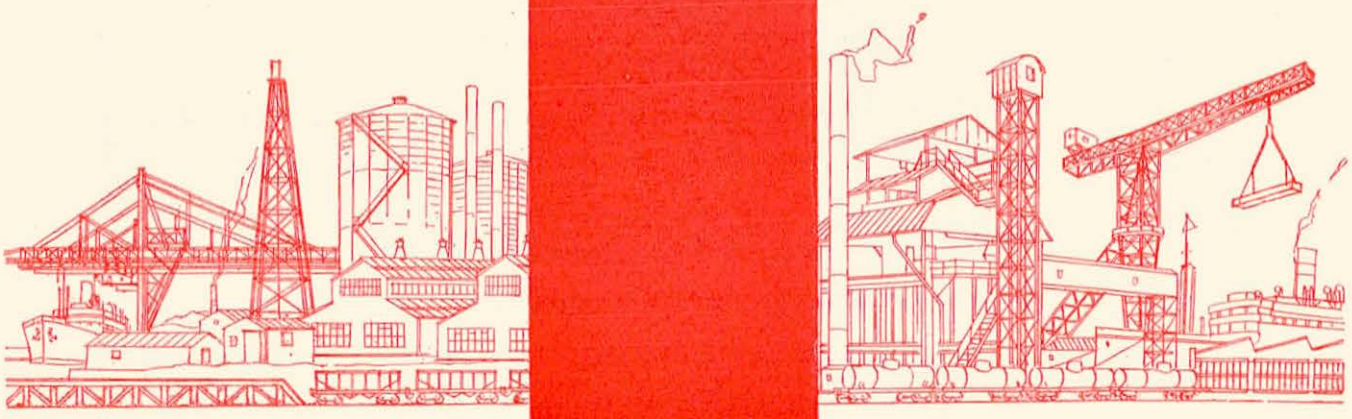
Wet clay and boulders dropped from shovel or clam shell deliver tremendous blows on car floors. Ajax Doors with their inherent resiliency successfully resist distortion.



UNION METAL PRODUCTS COMPANY

NEW YORK · CHICAGO · ST. LOUIS · WASHINGTON
RICHMOND · HOUSTON · SAN FRANCISCO · KANSAS CITY · MONTREAL

. . . WHERE RED SIGNALS SAFETY



STANDING out against the gray horizon like air beacons, red-leaded structures signal safety to invested capital. These vast areas of red-leaded surfaces bear mute testimony to the foresight of engineers and maintenance men who recognize in red-lead a sure means of protecting iron and steel against time, weather... corrosion.

Dutch Boy Red-Lead is a fine, uniform, highly oxidized pigment. It makes a paint that works easily...that furnishes an elastic, durable coating which sticks tight—to protect better—to wear longer.

You can buy Dutch Boy Red-Lead in either paste or liquid form. The paste—Dutch Boy Red-Lead in oil—comes in natural orange-red and can be easily shaded to darker colors. Dutch Boy Liquid Red-Lead is supplied in six colors—orange-red, two shades each of green and brown, and black. Our Department of Technical Paint Service will be glad to help you solve your metal painting problems. Ask our nearest branch for booklet—"Structural Metal Painting."

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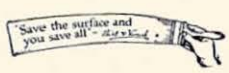
DUTCH BOY RED-LEAD



THEN AND NOW

In the early days of the "Iron Horse" the simple and sometimes crude brake shoes used were sufficient for the purpose intended.

With the modern train, fast and heavy, the best of brake shoes are needed to perform efficiently under the present day exacting demands.

"Diamond-S" brake shoes meet the operating conditions of today—plus economy per car-mile.

Substantial savings can be made by using pattern C-50 "Diamond-S" brake shoes on freight car equipment as well as passenger cars.

The American Brake Shoe and Foundry Company

230 PARK AVE., NEW YORK
332 SO. MICHIGAN AVE., CHICAGO

BUY *BIG* ENOUGH BEARINGS

YOU buy anti-friction bearings to perform better than plain bearings. But they won't unless they are big enough.

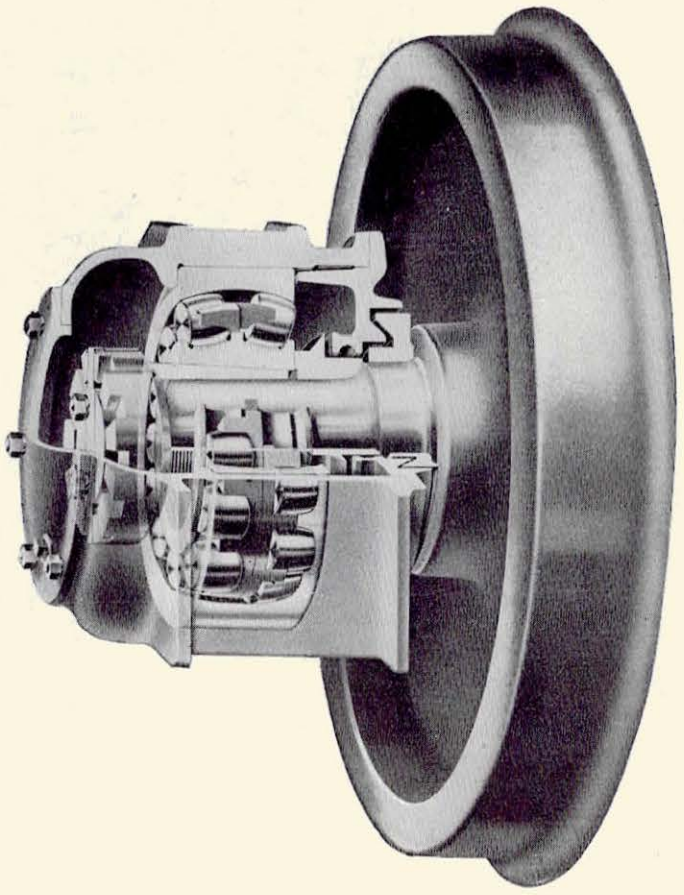
High bearing capacity is essential to provide a proper factor of safety and give the desired continuity of service.

So in picking anti-friction bearings scrutinize their size carefully and keep in mind the importance of dependable bearing performance.

There is a direct relationship between bearing size and bearing life, so make your anti-friction bearings big enough.

Unless you have an anti-friction journal bearing with sufficient effective capacity you have erratic bearing performance.

Because of its two rows of rollers and equal load distribution, the SKF Journal Bearing provides the maximum bearing capacity in a given space.



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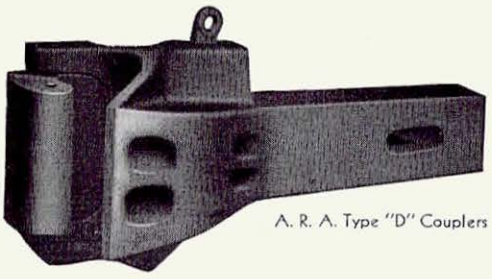
SKF INDUSTRIES, INCORPORATED,
40 East 34th Street, New York, N. Y.

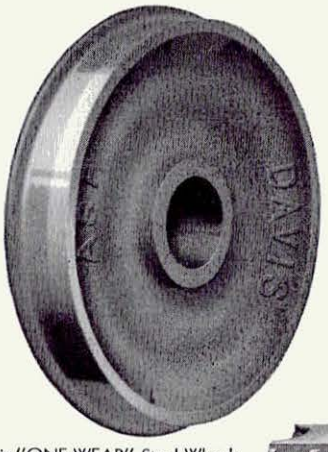
SKF

JOURNAL BEARINGS

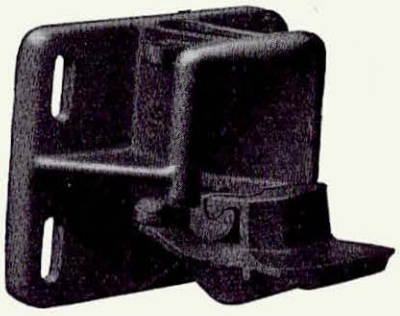
RAILWAY SPECIALTIES *and* MISCELLANEOUS STEEL CASTINGS



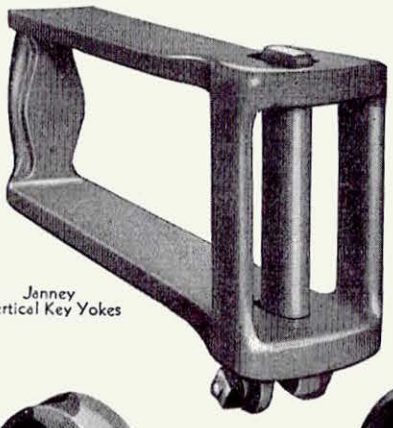
A. R. A. Type "D" Couplers



Davis "ONE-WEAR" Steel Wheels

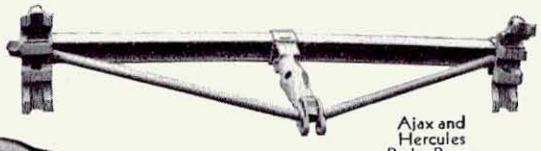


Simplex Adjustable and Reversible Coupler Pockets

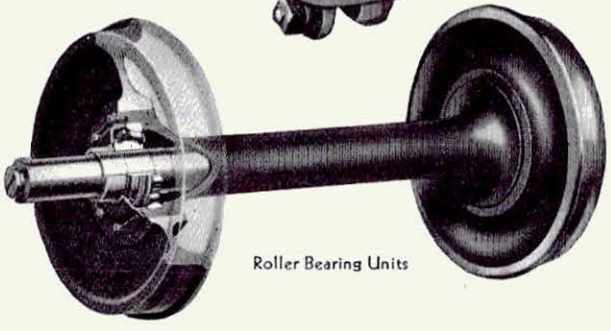


Janney Vertical Key Yokes

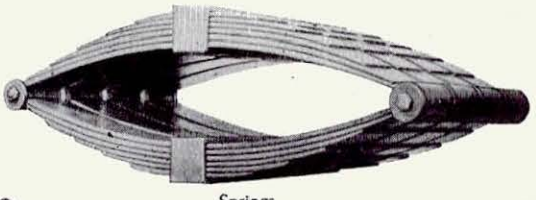
Cast Steel Truck Bolsters



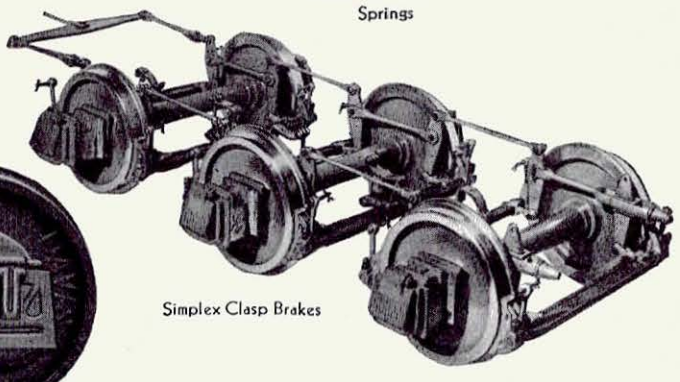
Ajax and Hercules Brake Beams



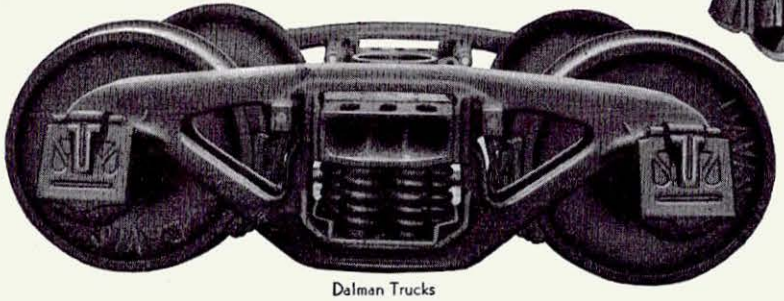
Roller Bearing Units



Springs



Simplex Clasp Brakes

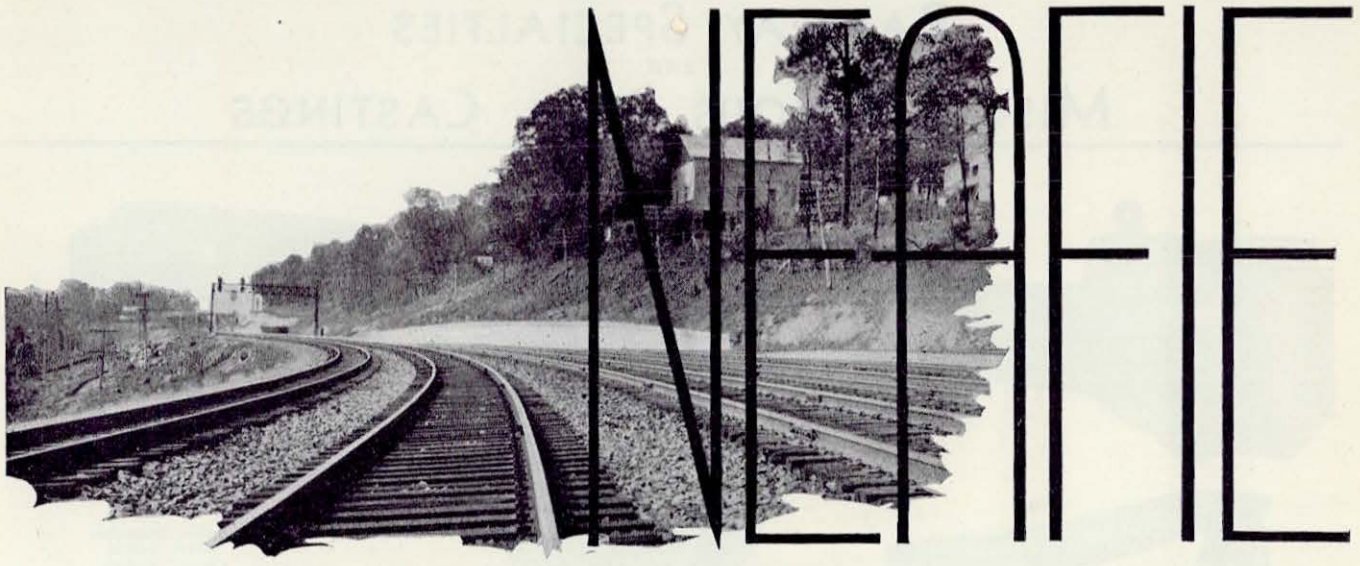


Dalman Trucks

HYLASTIC Steel Locomotive Frames

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS



A Proved American Track Construction

IN these days of heavy traffic and high speeds, maintenance costs are more than ever an item of serious consideration.

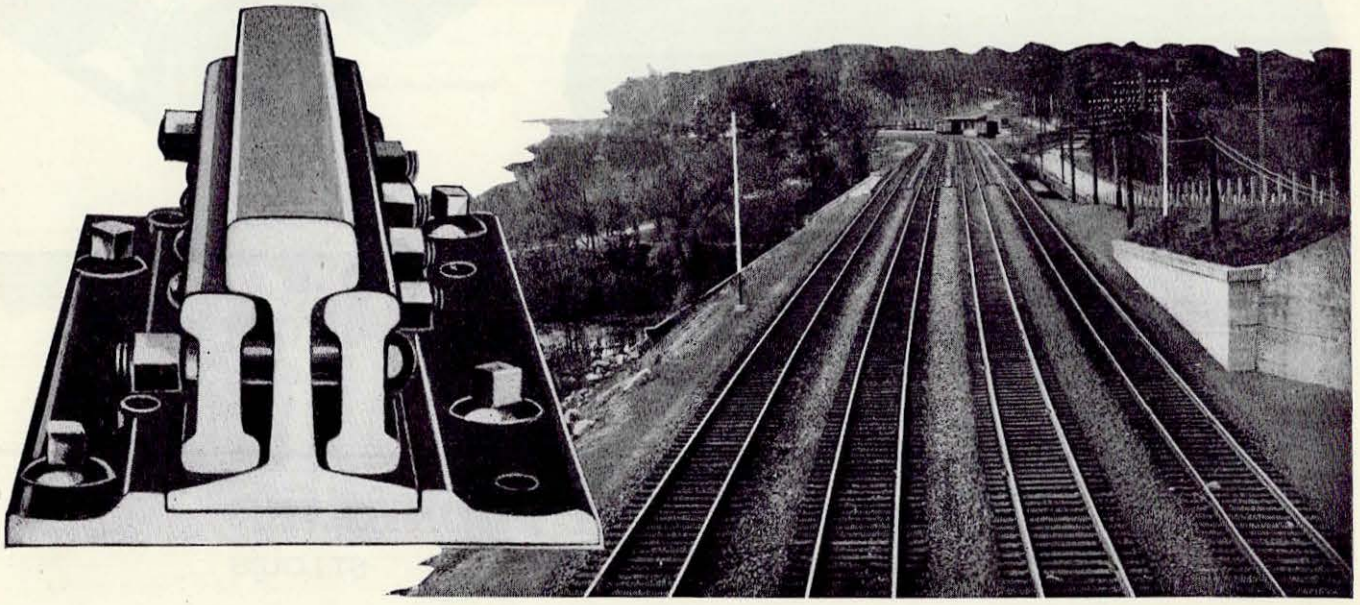
The Neafie Rail Joint with its heavy broad base plate constitutes a great stride toward permanent track construction and therefore an active agency of economy and at nominal cost.

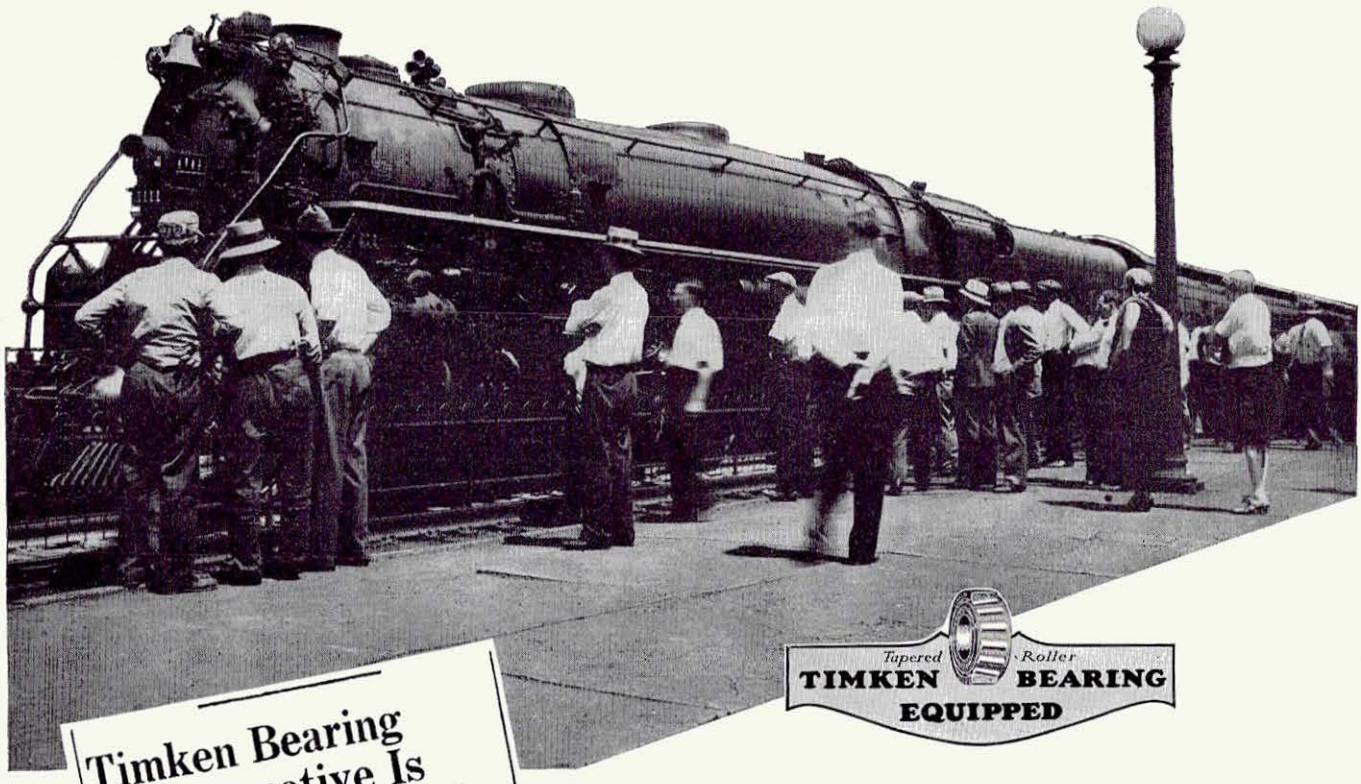
In addition to its characteristics of permanence, it is a tie saver and a labor saver.

These facts have been demonstrated over the past eight years.

THE RAIL JOINT COMPANY

165 Broadway—New York





Timken Bearing Locomotive Is Termed Wonder

"It's a wonder," declared Ed Williams, engineer on Missouri Pacific train No. 3 arriving here yesterday afternoon, in discussing the new Timken roller bearing locomotive which is being tested out on the Missouri Pacific. The engine returned to St. Louis on a night train last night.

"There is nothing much to do," he said, "and the engineer surely has it nice. The locomotive will use very little engine oil, and it runs so smooth that you can hardly realize you are riding on an engine.

"I understand this is the only engine of the kind in existence. It has been tried out on some railroads, and the Missouri Pacific now is giving it a test. The engine is built much the same as all other engines which are used on this railroad. However, it is larger and heavier. The wheels are smaller, giving the engine more pulling power."

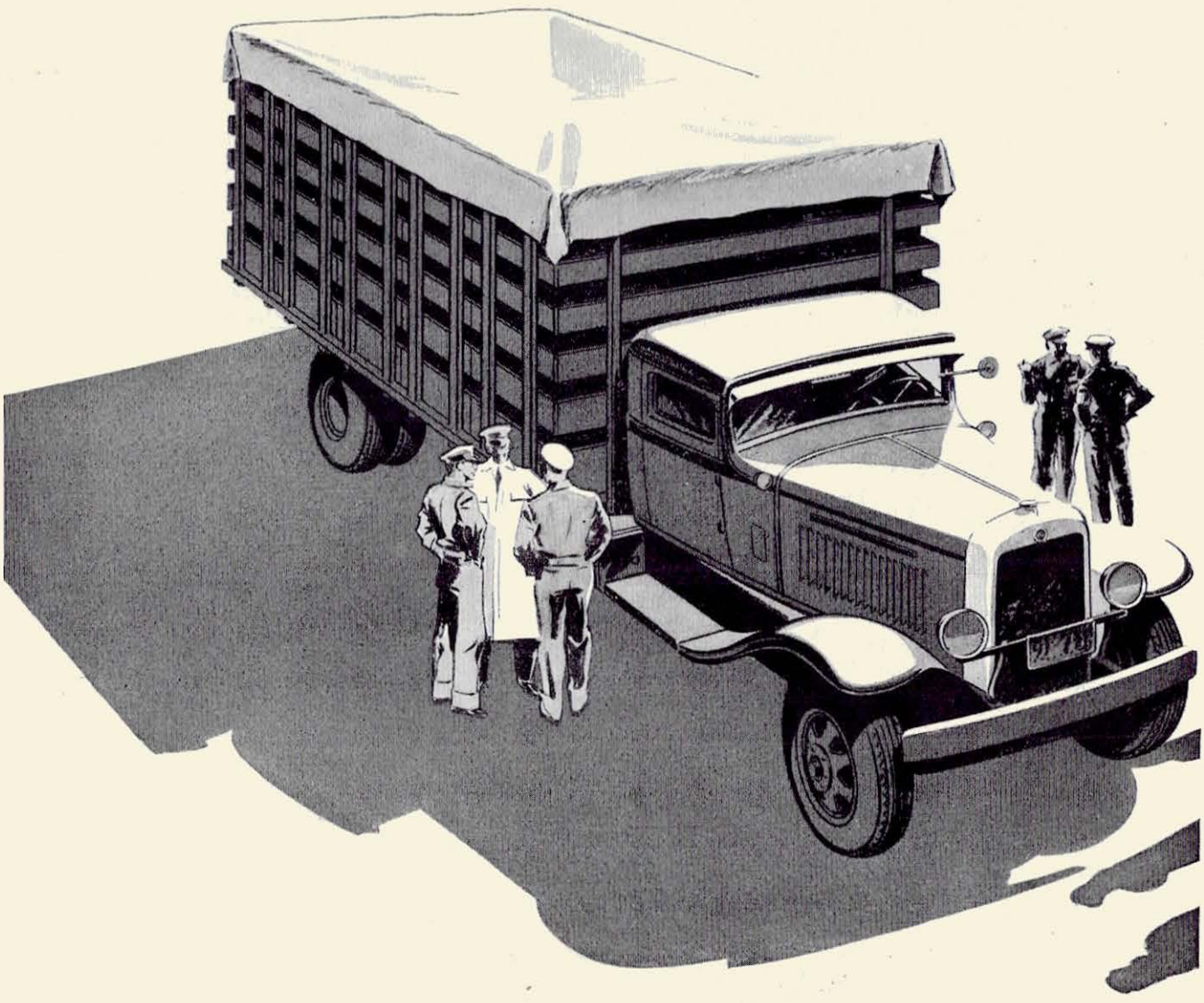
Under present arrangements, the engine will return to Poplar Bluff some time tonight, and will return to St. Louis on train No. 4 Friday. Many local persons visited the round house last night to look at the large locomotive, which is constructed with ball bearings throughout.

Reprinted from the Poplar Bluff, Mo., "American", Aug. 27th, 1931.

Ask the engineers —they know

Locomotive engineers would naturally be expected to know more about locomotive performance in service than almost anybody else. That is why their experience with, and comments on the Timken Roller Bearing Locomotive are so valuable. Wherever this pioneer engine has gone, the engineers who have handled it have been equally enthusiastic over the results obtained with Timken Tapered Roller Bearings. The Timken Roller Bearing Company, Canton, Ohio.

TIMKEN *Tapered Roller* BEARINGS



THESE MEN RODE TRUCKS IN 48 STATES AND FOUND NEW WAYS TO SAVE YOU MONEY

General Motors Truck transportation experts went into every section of the country and studied the trucking problems of the eighteen principal truck-using industries. They analyzed methods of distribution by truck, studied truck operating schedules, compared the efficiency of various types of trucks. They uncovered many sources of enormous waste in trucking practice, and they learned how the most successful truck operators in the country have eliminated waste. Now, they are prepared to bring you a complete digest of their findings, to apply the experience of hundreds of American

truck operators toward the most economical solution of your individual problems. Their counsel, through the General Motors Truck representative in your locality, is freely at your disposal. If you prefer, we will send you any one of the eighteen specific vocational survey reports or a new booklet (summarizing the results of our entire twenty-month survey activity) entitled "Cutting Distribution Costs with Motor Trucks." A coupon is attached for your convenience.

General Motors Truck Company,
Pontiac, Michigan.

Without placing me under any obligation whatever, send me a copy of your report, "Cutting Distribution Costs with Motor Trucks," also a copy of your survey, if any is available, covering my business.

Name_____

Firm_____

Business_____

Address_____

City and State_____

Time payments financed at lowest available rates through our own Y M. A. C.

GENERAL MOTORS TRUCK COMPANY, PONTIAC, MICHIGAN (A Subsidiary of Yellow Truck and Coach Mfg. Co.)

GENERAL MOTORS TRUCKS AND TRAILERS

THE RIGHT TRUCK FOR EVERY RUN—1½ TO 20 TON

Safety *that* Pays Big Dividends

FROM the standpoint of safety alone, an investment in HUNT-SPILLER *Air Furnace* GUN IRON BRAKE DRUMS pays big dividends.

They will not cut, score or grab—they always retain that smooth wear-resisting surface which insures maximum braking efficiency and positive control in all emergencies thus preventing accident and damage claims.

But in addition to this increased factor of safety, Brake Drums made of HUNT-SPILLER *Air Furnace* GUN IRON reduce overall braking costs to a point which insures attractive returns on the investment and greater net profits from every truck and coach equipped.

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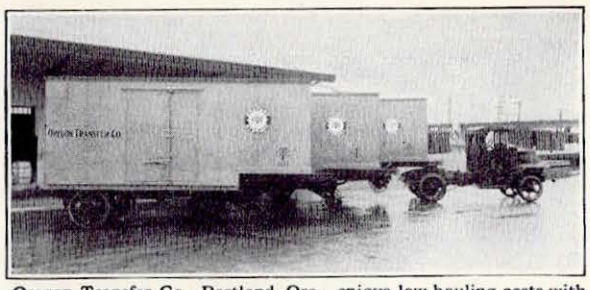
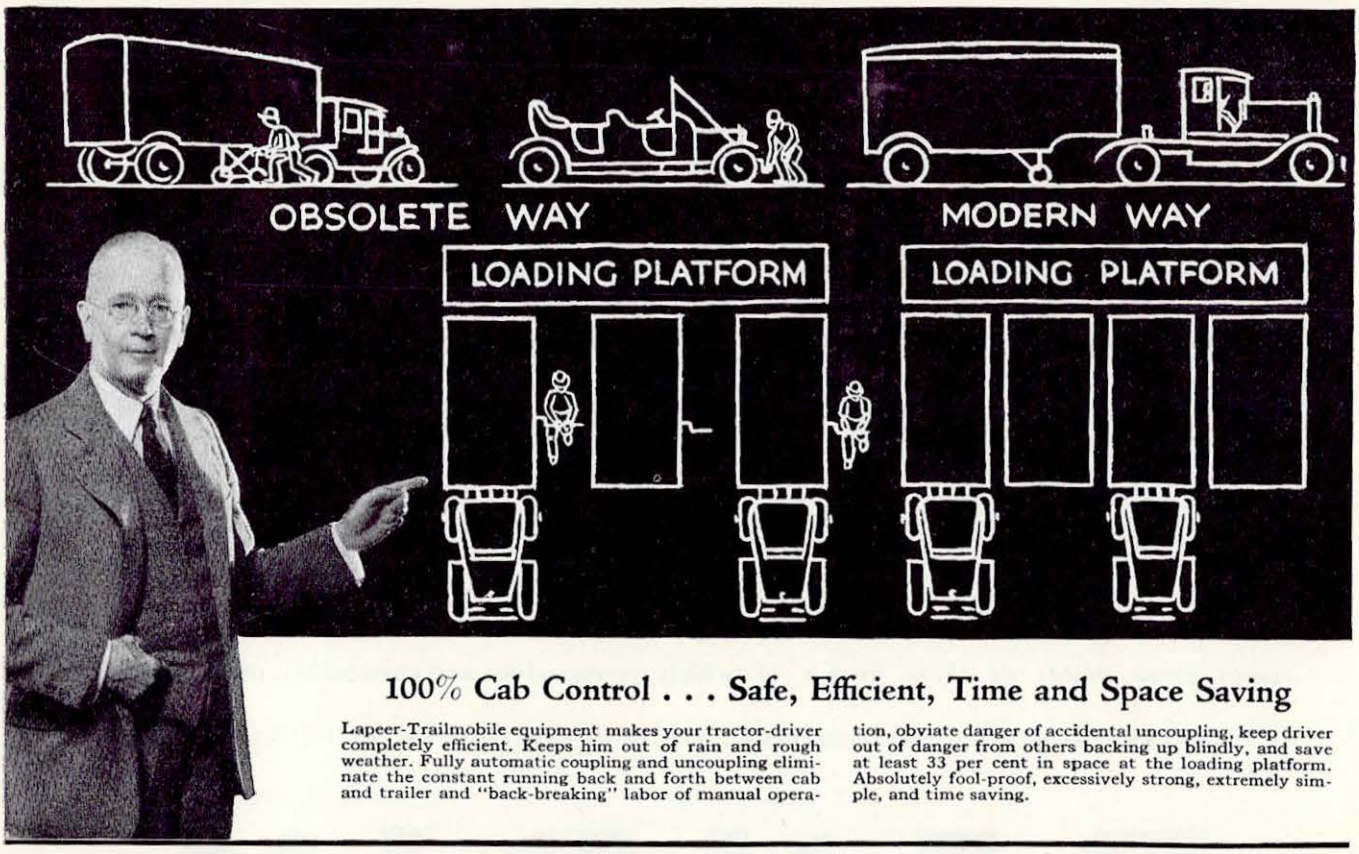


Oregon Transfer Co., Portland, Ore., enjoys low hauling costs with Lapeer-Trailmobiles.

The EFFICIENT Auxiliary Transportation System

LAPEER-TRAILMOBILE system solves the problem of prohibitive costs in inter-terminal and inter-city freight hauling. It shows the way in an auxiliary transportation system to the same high efficiency of operation that prevails in the primary service of freight dispatch . . . speeds up deliveries, cuts maintenance costs, puts auxiliary transportation on a basis of maximum profits and service, makes handling of motor freight an exact science. No other trailerized equipment offers such a combination of advanced improvements, including original and effective braking and coupling features. 100 per cent cab control (see above) is but one of them. That the Lapeer-Trailmobile system is suited to your company's requirements can be easily proved in a demonstration. For the full story, write The Trailer Company of America, Cincinnati, Ohio.



100% Cab Control . . . Safe, Efficient, Time and Space Saving

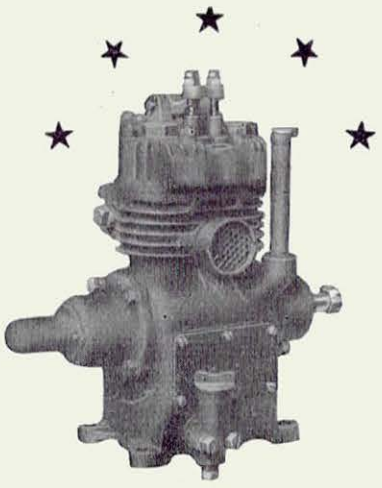
Lapeer-Trailmobile equipment makes your tractor-driver completely efficient. Keeps him out of rain and rough weather. Fully automatic coupling and uncoupling eliminate the constant running back and forth between cab and trailer and "back-breaking" labor of manual operation, obviate danger of accidental uncoupling, keep driver out of danger from others backing up blindly, and save at least 33 per cent in space at the loading platform. Absolutely fool-proof, excessively strong, extremely simple, and time saving.

Representatives in all principal cities

LAPEER-TRAILMOBILE

"TRAILERIZE AND ECONOMIZE"

100% CAB CONTROL . . . CHEAPER . . . FASTER . . . SAFER



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Reflecting the achievement of more than a half century's research, development and manufacture, Bendix-Westinghouse Automotive Air Brakes are easily today's most dependable control. Swift, heavy-duty highway transportation everywhere has learned to rely on the smooth, powerful, instant action of these super brakes . . . and not without reason ★ The combined resources of two great companies, pioneers in the braking field and the skilled hands of craftsmen, born of several generations of brake builders, are potent factors in the present success and future greatness of this recognized world standard of braking safety ★ That's why we say, *expect great things of these brakes* of which we ourselves are pardonably proud ★ THE BENDIX-WESTINGHOUSE AUTOMOTIVE AIRBRAKE COMPANY at Pittsburgh, Penna.

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AUTOMOTIVE AIR BRAKES

They Rely on INTERNATIONAL TRUCKS

Above: Hendrie & Co., Ltd., Toronto, Canada, uses dozens of International Trucks in its business as cartage agent for the Canadian National Railway. This heavy-duty International, equipped with winch, hauls the heaviest loads.

At Left: Saskatoon Cartage Co., Saskatoon, Canada, recently added this long, low Speed Truck to its International fleet, setting a new standard in the Saskatoon district for equipment of this type. The big body will carry the furnishings of an average 7-room house.

SPREAD FAR AND WIDE over the continent are the vital organizations that move the products of industry and agriculture and the household goods of the people. Railways, steamship lines, express companies, cartage companies, movers, warehousemen, overland truckers, and others —each group offering low-cost transportation based on efficient equipment and management.

INTERNATIONAL TRUCKS by the hundreds are at work in the service of these companies. Large fleets and individual trucks are operating with uniform efficiency. Their satisfactory performance — in good weather and bad, over good roads and no roads, on short hauls and long — is a wonderful testimonial to International Truck value.

The records of these Internationals—at work where the life and profit of the business depend to a large extent on truck efficiency—offer a safe guide for you when you need trucks for your own business.

You will find models suitable for every hauling requirement, in sizes ranging from ¾-ton to 5-ton, on display at the nearest Company-owned branch or dealer's showroom.

Catalogs will be sent on request.

INTERNATIONAL HARVESTER COMPANY
606 S. Michigan Ave. **of America** *(Incorporated)* **Chicago, Illinois**

At Right: A big, fast, 6-cylinder International Speed Truck—the latest addition to the large fleet of Internationals owned by Canadian Pacific Express. Canadian Pacific Railway also uses International Trucks.

INTERNATIONAL

If 10% would insure your job... would you Buy?

No matter how sure we may feel about our jobs, few of us would hesitate to spend 10% of our income to *insure* ourselves against job-loss.

None of us can *buy* such an insurance policy. But if we all work together, we can *make* one.

Spend 10% more!

How shall we do it? . . . Simply by spending 10% more than we've been spending—buying the things we need *now*, instead of waiting till spring.

A lot of us are afraid of the future. But the future's all right. It's the *present* we should worry about. There'll be plenty of jobs for everybody sometime—but there are too few today!

Because we're afraid, we are saving a larger share of our earnings than we ordinarily would. This kind of abnormal saving has taken millions of dollars out of circulation so they can't work. These sleeping dollars have forced our friends and neighbors out of their jobs.

By putting these sleeping dollars to work again—to buy what we need *now*—we create new jobs. And *new* jobs help create new prosperity.

In "hard" times, dollars always *buy more* and *earn less*. Our spending dollars buy about half as much *more* today than they did two years ago. But our *saved* dollars bring about a quarter *less*. Our spending dollars are worth $1.50—our saved dollars are worth about 75c.

A dollar *spent* now is worth $1.50.
A dollar *saved* now is worth 75c.

Today's prices are low—lower even than in 1921—some of them lower than in 20 years. We're surrounded by bargains—*real* bargains—fine quality at low prices.

Pretty soon—before you know it—these low prices will start *up*. Then the buying-power of our dollars will begin to *shrink*.

So, when we buy now, we are doing ourselves a double-barreled favor: we are getting the most for our money, and we are helping to insure our jobs!

There are about 30,000,000 of us who still *have* jobs, and probably twenty million of us are spending less than we can afford with present income. Let's make our jobs secure and create jobs for those who have none—by spending our dollars normally *now*.

THE NATIONAL PUBLISHERS' ASSOCIATION

"To use available income to purchase goods normally needed and in the replacement of which labor is employed, is a condition precedent to any hopeful program to constructively increase employment."[1]

From the Recommendations of the Committee on Unemployment Plans and Suggestions, of the President's Organization on Unemployment Relief.

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Effective immediately, A. M. Byers Company announces that it is manufacturing Genuine Wrought Iron Sheets — for Roofing and Siding — or other uses where Corrosion Resistance is desirable and the known, proved, long-time service of Wrought Iron provides unequaled economies.

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Write for prices—and remember that Byers is—(1) Producing the best wrought iron today that it has ever manufactured, because of complete and accurate control in every step of manufacture — (2) Byers is constantly providing new uses for wrought iron in an effort to assist Industry in gaining greater Economy from its materials. A. M. Byers Company, Pittsburgh, Pa. Established 1864.

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CUT CRATING COSTS WITH BOLTS

Containers for bulky, heavy articles can be simplified with the use of R B & W bolts and nuts

SHIPPERS!
A bolted crate can save materials, labor, weight and freight. Look into this at once!

To reduce the cost of your shipping containers, consider the use of R B & W Bolts and Nuts. Numerous shippers of heavy machinery and other bulky objects have saved money in several ways by adopting bolting material. Here are a few savings that can be accomplished:

1. Less wood required in crate.
2. Less time and labor required.
3. Less gross weight per article shipped in the crate.
4. Less freight paid because of lighter weight.

Corollary advantages are increased strength and added protection, and quicker unpacking at destination. A bolted crate is often used again, by certain shippers who erect the equipment they sell. Overhaul your shipping room methods, and see for yourself how you can increase efficiency by modern packing methods aided by the use of R B & W Bolts and Nuts.

You will find R B & W Bolts and Nuts the best to use for this as for all other purposes, because of their consistent high quality, uniform strength and ease of assembly.

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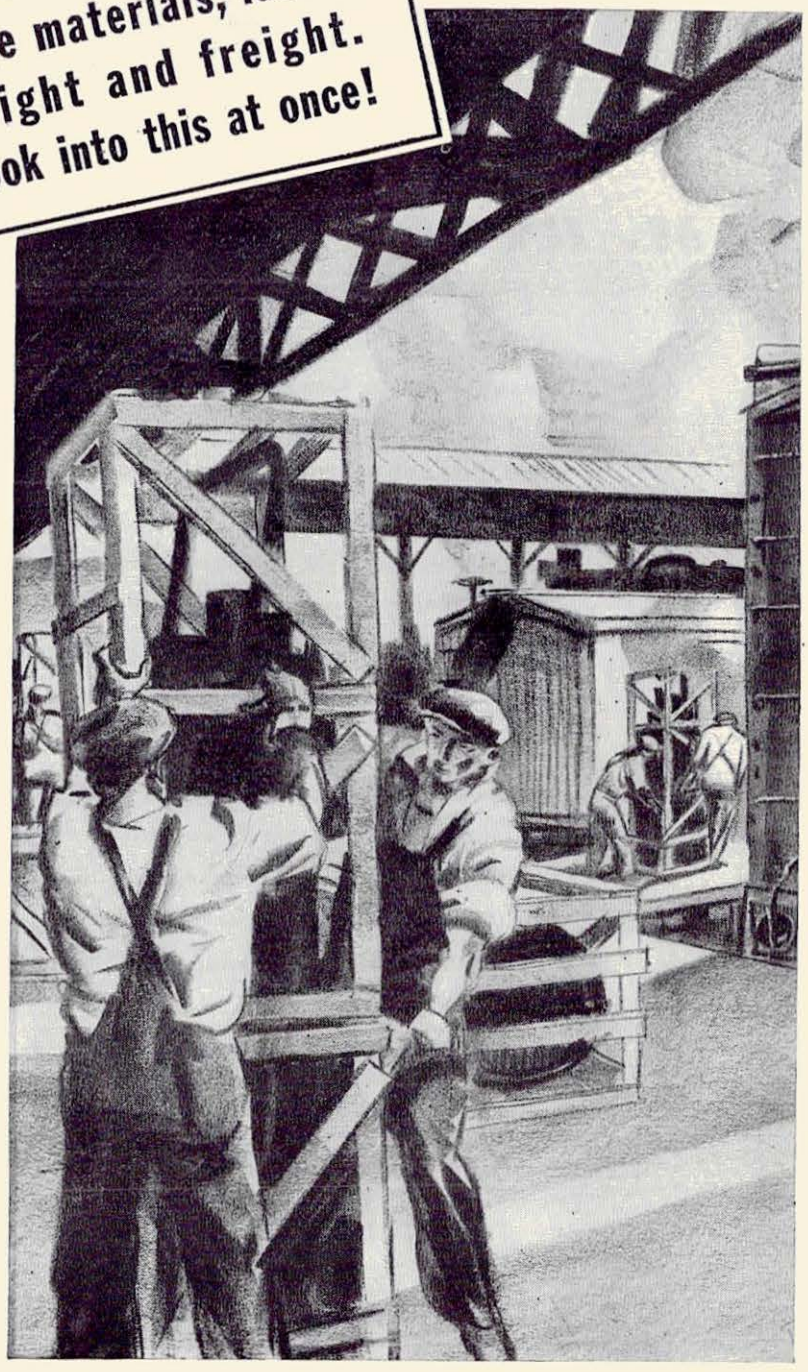

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7540 H.P. hours of Service

Made possible by use of Gargoyle D.T.E. Oil in these locomotives

The Hoboken Manufacturers Railroad operates two Diesel Electric Locomotives—one a single engine unit and the other a double engine unit.

No lubricant but Gargoyle D.T.E. Oil Extra Heavy has ever been used on these locomotives since their purchase in January 1929.

In the single engine unit, the oil was renewed after six months and then again after seventeen months' service. In the double engine unit, the oil has been changed every twelve months.

Following the completion of first year's service, the builder of these locomotives who had previously set 2000 h.p. hours as the official economy standard, approved the new economy standard of 7540 h.p. hours per gallon set up through the use of Gargoyle D.T.E. Oil Extra Heavy.

On the Erie Railroad's five Diesel Electric Locomotives, this same Gargoyle lubricant has given highest satisfaction and real economy in service.

New York Central Railroad operates about one-third of the Diesel Electric Locomotives in the world and Gargoyle D.T.E. Oil is used on every one of these forty-four units.

You too, can cut costs for lubricants, maintenance and power, with the aid of Gargoyle Lubricants and Vacuum engineering service.

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Stationary Steam Engines, Diesel Engine Lubrication, Air Compressor Lubrication, Bearings and Their Lubrication, Gear Lubrication, Machine Shop Lubrication.

These specialized treatises will help you secure better lubrication. We will be glad to send any of them to any railroad executive or lubrication engineer, if requested on your road's letterhead.

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When Found, Make a Note

"If there's a hole in a' your roofs,
I rede ye tent it;
A chiel's amang ye takin' proofs,
An' faith, he'll prent it!"

Here I am again!

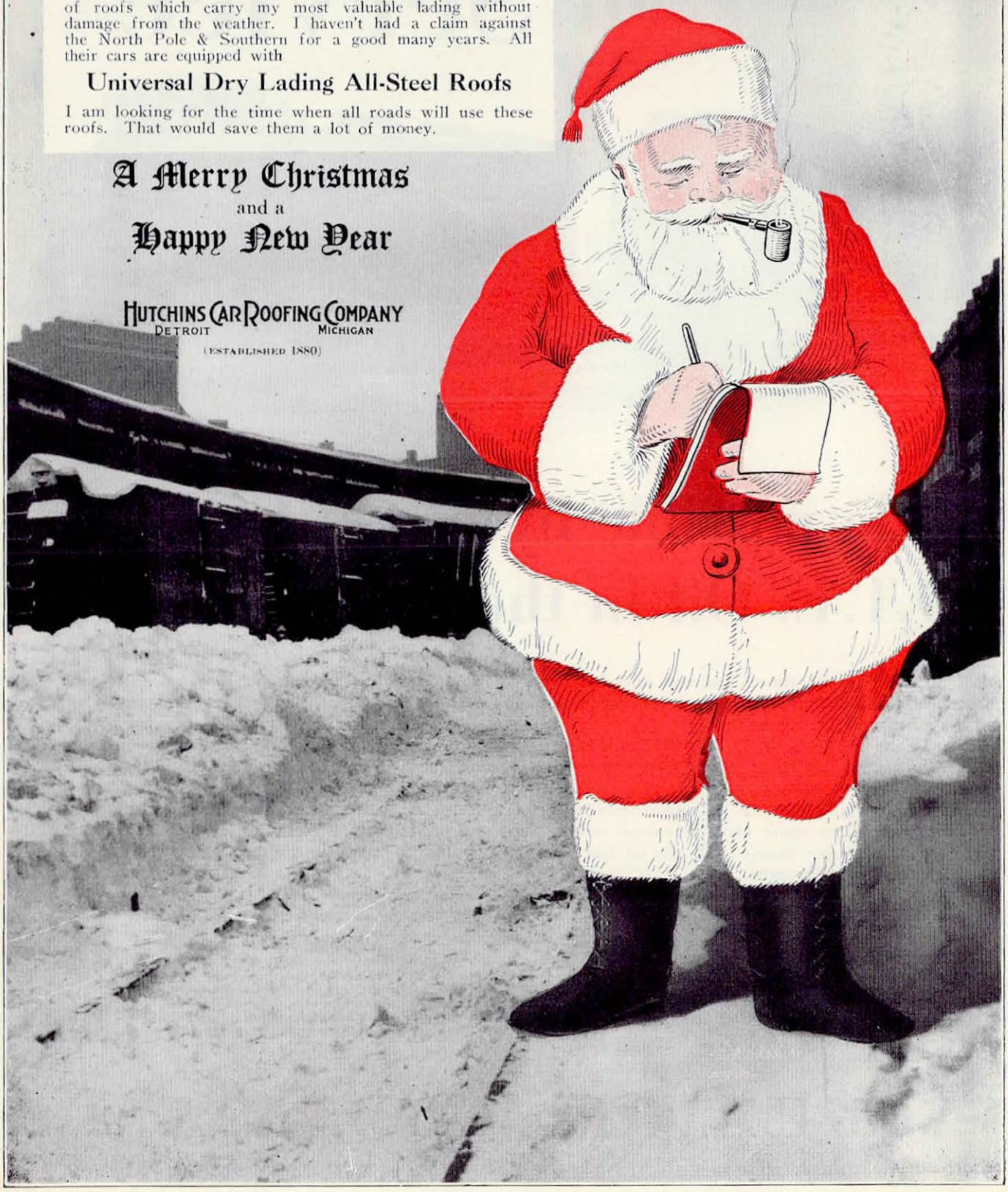
For several years I've been taking notes on the kind of roofs which carry my most valuable lading without damage from the weather. I haven't had a claim against the North Pole & Southern for a good many years. All their cars are equipped with

Universal Dry Lading All-Steel Roofs

I am looking for the time when all roads will use these roofs. That would save them a lot of money.

A Merry Christmas
and a
Happy New Year

HUTCHINS CAR ROOFING COMPANY
DETROIT MICHIGAN
(ESTABLISHED 1880)



"Railway Policy Toward the Commission"

Has it become improper and dangerous for railway officers to criticise the Interstate Commerce Commission to the American public in addresses or statements given to the press? This question is raised by statements made in an address on "Railway Policy Toward the Interstate Commerce Commission" which was delivered recently in New York by Charles E. Cotterill, attorney for the Southern Traffic League, one of numerous lawyers who appear for shippers before the commission.

Mr. Cotterill said that he had heard "a very disturbing rumor" that railway executives "had concluded to inaugurate at once an open attack upon the Interstate Commerce Commission," but that "calm reflection induces the belief that railway executives would not be likely to commit the serious mistake of engaging in such an enterprise when, in the long run, *they would necessarily be the principal losers.*" (Italics are ours). He expressed the belief that "we are going to have the Interstate Commerce Commission or its equivalent for a long time to come," and called attention to the fact that Senator Couzens had introduced a resolution providing for an investigation of the railway situation by a joint committee of Congress. He pointed out that railway executives will have, during such an investigation, "an opportunity to present in *an environment of perfect propriety* (italics are ours) any points of view they may possess concerning the functioning of the commission", and anticipated that "immediately railway executives would conclude to discontinue any sort of hostile demonstrations against the commission in the public press", because the industrial and agricultural interests would "unite in stern resistance to any connected purpose of railway management to diminish the prestige and public estimation of the commission's integrity and usefulness."

Criticism of the Commission

The *Railway Age* never heard a rumor of any intention of railway executives, individually or collectively, to attack the commission in the public press or anywhere else until the rumor made its appearance in Mr. Cotterill's speech. This paper is glad, however, that Mr. Cotterill made his speech, because what he said strikingly illustrates the attitude toward the commission now assumed by a certain class of persons, and which these persons, and apparently most members of the commission, wish the public to have toward it. The commission has great power over the railways, and the more its power has been increased the more opportunities there have been for those who appear before it on behalf of shippers to enlarge their practice. A reduction of public confidence in its wisdom and fairness, as a result of criticism of it, might result either in a reduction of its power and consequently in the number of cases heard by it, or in an increase in the number of decisions favorable to the railways rendered. Either of these results would be disastrous for attorneys and other persons who derive a livelihood largely or wholly from representing shippers. Therefore, such persons naturally consider it most iniquitous for anybody to criticise the commission upon the ground that it is largely responsible for the present financial condition of the railroads. Mr. Cotterill graciously concedes that some such criticism may be permitted, but implies, in his refined phraseology, that it should be confined to "an environment of perfect propriety", that is, to hearings before some government body.

Those who have succeeded in getting the commission to regulate as it has in the past may well "crook the pregnant hinges of the knees where thrift may follow fawning" by telling it that to criticise it in addresses and in the press, rather than in an "environment of perfect propriety", is vulgar, may be effective, and therefore should be punished, but the plain truth is that there is nothing in the personnel of the commission, its position in the government, its knowledge of the railroad business or its past policies that warrants the establishment of a censorship for its protection. Even the Supreme Court of the United States does not escape criticism in the press and elsewhere, and the commission is not a court, but an administra-

tive body which is constantly subject to political pressure because the appointment and reappointment of its members are subject to confirmation or rejection by the Senate. It has more power than all the officers of the railways to determine their gross and net earnings. It should be held responsible by the public for the way in which it exercises that power, and the public will never know how it does exercise it unless the facts are disseminated constantly and through every available channel. Therefore, to indicate, as Mr. Cotterill did, that spokesmen of the railways should restrict their comments upon the commission's policy to "an environment of perfect propriety", is ridiculous, and savors strongly of a servility to the commission that is not entirely disinterested.

A Prediction Regarding Regulation

In an issue of the American Lawyer published almost twenty-four years ago there appeared an article on government regulation written by the president of a large university whose views upon public questions subsequently attracted world-wide attention. We quote the following from this article:

"Governmental control, which we are undertaking so extensively and with so light a heart, sets up not a reign of law, but a reign of discretion and individual judgment on the part of governmental officials in the regulation of the business of stock companies owned by innumerable private individuals and supplying the chief investments of thousands of communities. * * * Regulation by commission is not regulation by law, but control according to the discretion of governmental officials. * * * There is no logical stopping place between that and the actual conduct of business enterprises by the government. Such methods of regulation, it may be safely predicted, will sooner or later be completely discredited by experience. Commissions in the future as in the past will reflect rather public opinion than business discretion."

The man who made these predictions regarding government regulation was no less a person than Woodrow Wilson, who in February, 1919, as president of the United States, gave Joseph B. Eastman his first appointment to the Interstate Commerce Commission. The trouble with federal regulation, and the principal cause of the present railway situation, is that the predictions made by Woodrow Wilson have been fulfilled to the letter. The rate-making provisions of the Transportation act were passed by Congress to so limit by law the discretion previously exercised by the commission as to make as certain as possible that regulation of rates subsequently be such as to enable the railways to earn the fair annual return to which they are constitutionally entitled. Nevertheless, they have never earned that return because, as predicted by Mr. Wilson, regulation by the commission has become more and more, "not regulation by law, but control according to the discretion of governmental officials" whose policy has reflected "rather public opinion than business discretion". And now the commission is asking Congress to adopt new rate-making provisions which would expressly authorize it by law to exercise virtually unlimited discretion in determining how much the railways should be allowed to earn. It says that such legislation is needed to empower it to so regulate as to enable the railways to earn larger returns in good years to offset the necessarily small returns earned in bad years.

The plain and indisputable fact is, however, that the Transportation act has given it this authority for almost twelve years, and that the reason why, throughout this period, the railways have failed to earn a fair return has been that, in the exercise of a "wise discretion", the commission has refused to let them earn it. Its plea for a change in the rate-making provisions —excepting those as to recapture—is merely a plea for relief from the mandates of existing law in order that, to use Mr. Wilson's language, "a reign of discretion and individual judgment on the part of governmental officials" may lawfully be substituted for "a reign of law". It is a plea for more discretionary power for the commission, and not a plea for more power for fair and constitutional regulation.

A Comment from Mr. Eastman

Mr. Wilson predicted that "Commissions in the future as in the past will reflect rather public opinion than business discretion". Is this not true of the present policy of the commission? A majority of the commission finally voted to let the railways use in accordance with their own plan, the revenues derived from the advance in rates recently granted. In his opinion dissenting from this final decision Commissioner Eastman made the following highly significant statement: "The motive behind this action is evidently *fear* that if the commission should adhere to the pooling plan that plan might be rejected, and *the commission thereupon be held responsible for financial difficulties which might then ensue*". (Italics are ours). This seems to be inside information to the effect that the commission is influenced by the fear of criticism. If it does fear public opinion then it is quite evident that in some way there must be created a public opinion in favor of fair regulation that the commission will fear, or the railways will continue in the future as in the past to be subjected to unconstitutional and confiscatory regulation.

The commission should be a Supreme Court of Transportation, the members of which should be expert, impartial and free from political pressure and partisan criticisms or obsequiousness. It will never be such a Supreme court of transportation, however, until its members are selected for their special qualifications and appointed for life. Experience under the Transportation act has demonstrated only too plainly that its policy reflects "rather public opinion than business discretion" or provisions of law. As long as this continues to be true, it will be not only the right but the duty of railway executives to try by every legitimate and effective means to create a public opinion which will demand fair and constructive regulation.

A Vindication Of Past Practice

The period through which the railways are now passing is demonstrating in no uncertain way the value of a liberal policy of roadway maintenance in periods of favorable earnings. At no time in the history of the railways had the roadway been brought to as high standards as in the years culminating in 1929. In those years, more reserve strength was plowed back into the properties in the form of heavier rail, more and better ballast, stronger track fastenings, better drainage, etc., than ever before. At the same time, large investments were made in work equipment of many types to reduce the cost of routine operations. All of these expenditures, while increasing the capital account, had as their ultimate objective the reduction in maintenance costs.

That such expenditures can be amply justified by the returns which they yield in terms of reduced costs of operation and of maintenance in periods of continued heavy traffic are capable of demonstration. That the results are even more striking in periods of declining traffic is evidenced by the manner in which the tracks are now standing up in the face of a long period of drastic curtailment in expenditures.

No experienced maintenance man will delude himself with the thought that the curtailments in expenditures that are now being made are in reality savings, for he knows that there will inevitably come a day of reckoning when the deficiencies of present-day maintenance must be made good. At the same time, the really excellent riding condition of the tracks today after two seasons of sharply reduced expenditures affords a striking vindication of the policy of making large outlays for roadway maintenance in periods of good earnings in the knowledge that these expenditures will stand in good stead those roads that have the courage to spend such money wisely when the funds are available. The condition of the track and roadbed today affords striking tribute to the maintenance policy of the recent past.

Even a Waterway Advocate Wonders Why

An editorial in the Chicago Tribune of December 17 leads to the conclusion that even the most enthusiastic of waterway advocates are beginning to question some of the extravagant and drastic demands imposed by government engineers in dealing with bridges across navigable streams. True, the editorial was not prompted by concern over the enormous expenditures which the railways have been compelled to make in meeting the requirements of increased bridge clearances, but is an expression of impatience because delay in rebuilding bridges is interfering with the completion of the Illinois waterway.

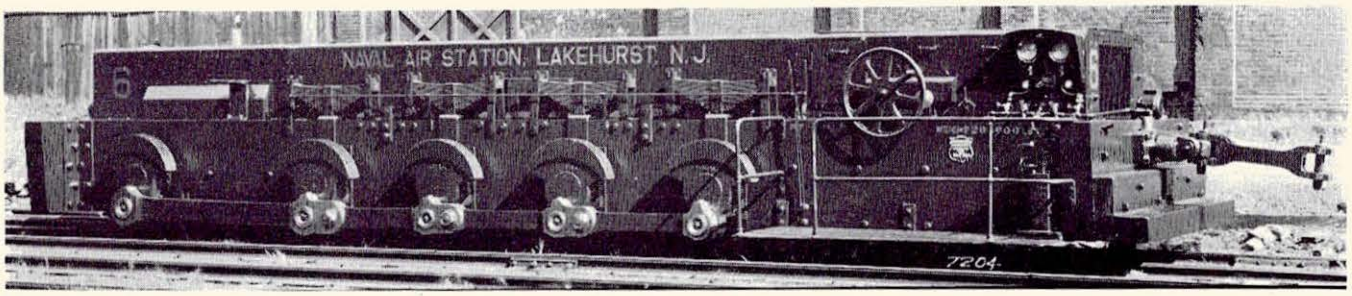
The point raised by the editorial, however, is a pertinent one, and is effectively set forth in the closing paragraph:

"There is a curious assumption in the minds of government engineers regarding bridges and it applies not only to the bridges over the Illinois but to those over the Chicago river as well. It seems to be taken for granted that they will interfere with navigation, though the burden of proof should rather be upon those using the waterway to prove that this is so, if it is. Navigation should be obliged to show that it must have additional clearance; otherwise there will always be a suspicion that the raising of bridges is demanded not so much to meet the needs of river shipping as to handicap travel by road and rail."

This is what the railways have contended for years. Almost never has a railway undertaken the reconstruction of a bridge over a stream that is navigable or presumed to be potentially navigable without being confronted with demands for an increase in the vertical headroom or in the length of spans, or both, with no more specific explanation than that such changes were necessary to meet the requirements of water transportation.

May we hope that this editorial is a forerunner of some increased degree of reason in the approach to such problems.

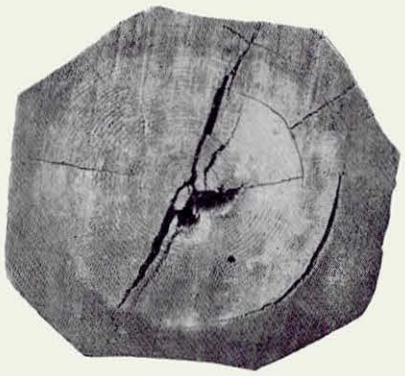
* * * *



Locomotive Used in Housing the Giant Dirigible "Akron" at the Lakehurst, N. J., Naval Air Station

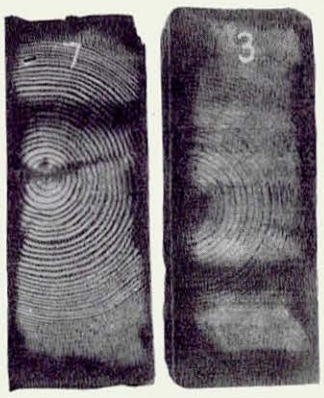
The locomotive operates on a circular track around the mooring mast in front of the hangar and positions the stern of the dirigible preparatory to housing it. The locomotive is driven by a 250-hp. LeRoi gasoline engine, through a hydraulic transmission, weighs 264,000 lb. and develops a drawbar pull of 60,000 lb. at speeds up to 100 ft. per min. The maximum speed, unloaded, is seven miles an hour. Built by the H. K. Porter Company.

Dollars Spent for Treated Wood Are Returned Manifold



Butt of a Creosoted Pile After 35 Years' Service in a Trestle Near Henderson, Ky.

Savings realized by preserving ties are responsible for expanding use of impregnated timbers



Cross-Section of Two Yellow Pine Stringers Taken From the Lake Pontchartrain Trestle After 45 Years' Service

ACCUMULATED benefits from the practice of protecting crossties from decay and wear were responsible for saving at least $33,000,000 for the Class I railways in 1929. In that year, according to statistics of the Interstate Commerce Commission, these railways renewed 74,679,375 crossties at a total outlay of $100,585,843. Seventy-nine per cent of these ties, or 59,047,380, were replaced by treated ties that cost $1.46 in track, while the remainder (except for a few steel and concrete ties) were of untreated wood that cost $0.93 in place. The renewals in 1929 represented an average replacement of 209 ties per mile of track (excluding the mileage laid with switch and bridge ties) out of a total of 2,974 ties per mile, which is equivalent to an average life of 14.2 years. If the railways had previously made all their renewals with untreated ties giving an average life of 7½ years, thereby, requiring the annual renewal of 400 ties per mile, they would have been compelled to replace about 143,000,000 ties in 1929, which at a cost of $0.93 in place, would have required an outlay of $133,000,000.

This accomplishment is by no means all that the railways can expect as the result of proper preservation and adequate protection of their ties. The attainment of a life of 14.2 years is only a fair performance compared with the results obtained on individual railways, some of which are renewing less than 100 ties per mile per year. If, therefore, the Class I railways should obtain an average life of 20 years from their crossties, and this is by no means an unreasonable assumption, for it is already being exceeded by several roads, their annual requirements would amount to about 150 ties per mile, and they would then need to replace only 53,500,000 ties (on the basis of the present Class I mileage) which, at a cost of $1.46 per tie, would represent an outlay of $78,100,000. Thus, it is not at all unreasonable to assume that they can effect a still further saving of at least $22,000,000 in their annual tie renewals.

Whether this saving or an even larger sum is to be realized will depend on the extent to which the roads as a whole adopt, and rigidly adhere to, the practices observed by those roads which are now obtaining the longest life from their crossties. There is no short cut to good results. Rather, the answer is to be found in scrupulous attention to details—a purchasing policy that embraces a rigid adherence to specifications as to both size and freedom from decay, collection and yardage practices that will insure against decay after delivery, treatment that is adequate and adapted to the climatic conditions of service, effective protection of the ties from mechanical deterioration, and supervision of the track forces that will insure against abuse and premature removal. These measures seem almost too obvious to deserve mention, but there is ample evidence that deviation for "practical" or "business" reasons has not infrequently resulted in a loss of useful tie life which far outweighed the temporary advantage gained.

There is opportunity also to improve the protection afforded the ties against mechanical deterioration. Larger tie plates of better design, with fastenings that will better resist movement of the plate relative to the tie are among the developments of recent years that will make for longer service life of crossties. The railways that have made the longest use of these more advanced forms of construction are among those that now enjoy the lowest tie renewal records.

Treated Bridge Timbers

Unfortunately, no data comparable with those available for crossties are to be had which can serve to show with equal clearness the economies that are and can be secured by the railways, as a whole, through the treatment of bridge timbers. On the other hand, it is possible to cite individual structures that are in themselves striking object lessons in the economy of timber treatment. On the Lake Pontchartrain trestle of the Southern

Railway, which was built in 1883, all but 2.8 per cent of the original stringers were still in place after 45 years. Part of the trestle approach at the north end of the Louisville & Nashville bridge over the Ohio river at Henderson, Ky., consisted of creosoted pile bents that were renewed in 1919 after a service life of 35 years, but even then only 15 per cent of the piles were in a condition requiring renewal, which was demanded for other reasons. A pile trestle built on a branch line of the Southern Pacific (Pacific System) in 1896, according to a statement by F. D. Mattos, manager of treating plants, has never had a single piece renewed. Other structures of equal age on this road have been altered only to increase their load-carrying capacity. A. F. Robinson, late bridge engineer of the Atchison, Topeka & Santa Fe, estimated the average life of creosoted ballast deck trestles at about 36 years. On the whole, however, as stated in the report of the Committee on Wooden Bridges and Trestles of the A.R.E.A. in 1927, the great bulk of the creosoted pile trestles now in service are not yet old enough to permit of an accurate determination of full service life. Some have had to be renewed after only 20 years' service, but in the opinion of the committee, this short life has usually been due to imperfect handling of the treatment of the timbers or failure to protect the cut surfaces when framing the timbers. The committee, however, arrived at 30 years as a conservative figure for the average life of treated trestles, compared with an average of 10 years as the average life of untreated trestles. On the assumption that the cost of a treated structure will be 1.4 times that of an untreated structure, the committee found that the annual cost of the two types of structures would be the same if the treated structure lasted about 16 years, or a life much less than the normal expectancy. The committee concluded therefore, "that creosoted timber used in bridge construction will show decided savings over a period of years."

Extensive Use of Treated Timber

A further measure of the demonstrated economy of treating timbers in trestles is afforded by the extent of their use on several roads. Forty per cent of all the timbers and piles in bridges, trestles and docks on the Southern Pacific, Pacific System, which amount to about 140 track miles and contain about 400,000,000 ft. b. m. of wood, have been treated. The Illinois Central has 412,387 track feet of ballast-deck trestles and 4,371 track feet of open-deck trestles constructed entirely of treated wood. The Lehigh Valley treated 21,687,813 cu. ft. of wood in timbers, and 2,996,254 cu. ft. of wood in piles for use in bridges between 1910 and 1930 inclusive. The Atchison, Topeka & Santa Fe has treated 27,506,555 cu. ft. of lumber and 13,903,546 cu. ft. of piling since it started wood preservation in 1885.

It is interesting to note that whereas the earliest examples of creosoted pile trestles were open-deck structures, the vast majority of the treated trestles built were provided with ballast decks, with the result that many railway men have acquired the habit of thinking of the open-deck trestle as a structure in which treatment cannot be justified except for the use of treated piles in salt or brackish water. This point of view is no longer universal, the Chicago, Burlington & Quincy, for example, having adopted the use of treated wood for general use in open as well as solid-deck trestles.

Framing Before Treatment

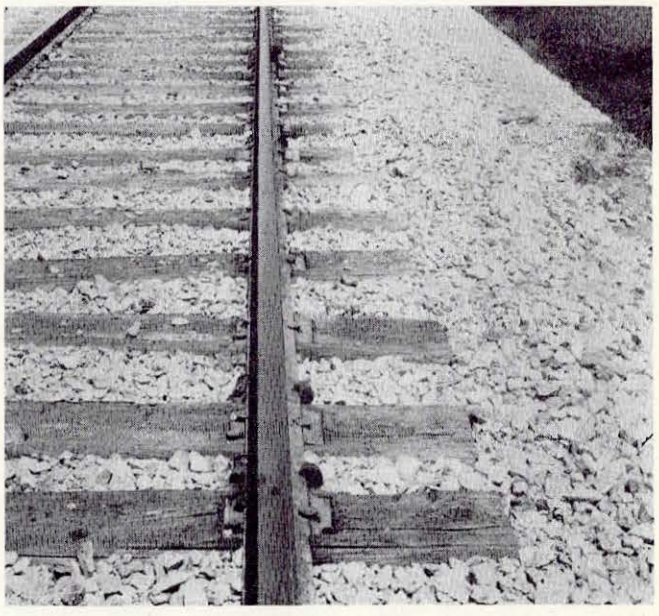
However, by far the most outstanding change in recent years with respect to the use of treated wood in bridges has been the movement to frame timbers before treatment. This innovation, which entailed a departure from the carpenter practice of centuries of cutting to fit rather than cutting to measure, met with many objections, but it afforded the only means of overcoming the primary cause of premature decay of treated sticks in bridges—namely the entrance of fungus spores into the wood at places where the protective treated shell has been broken by field cutting after treatment. However, it was soon demonstrated that framing to measurement imposed no insurmountable difficulties and, what was more astounding, that mill framing is cheaper than field framing.

This was brought out emphatically by Earl Stimson, chief engineer maintenance, Baltimore & Ohio, in a paper read before the American Wood-Preservers' Association in 1928, in which he reported a saving of $31,000, or an average of about $6 per M ft. b. m., in treating 5,138,295 ft. b. m. of bridge timbers and ties during 1927 in a mill that represented a capital outlay of $32,290. These figures make no allowance, of course, for the increased life to be realized from a structure built of preframed pieces.

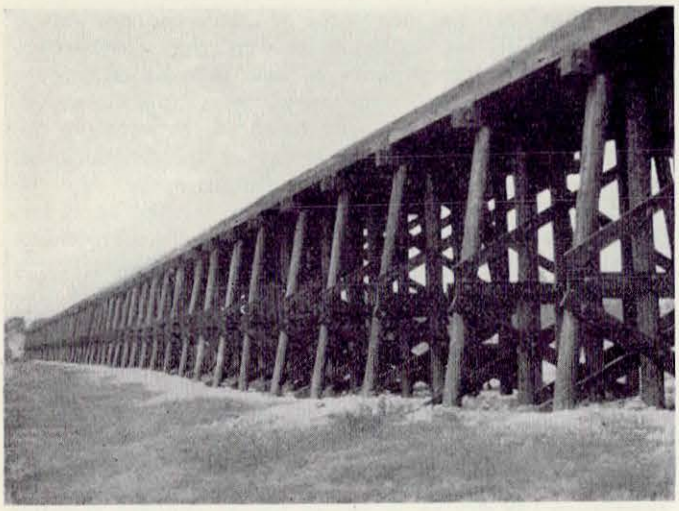
As a consequence of these demonstrated economies, the practice of preframing is being adopted rapidly by different railways, but improvement in practice has not stopped with the mere change from field to mill framing. The pile trestle, particularly the open deck structure, represents an evolution from the earliest of railway bridges, the details of which were developed to meet conditions and requirements entirely foreign to any considerations of mill framing. As a consequence, pile trestle plans are now being revised with a view not only of facilitating preframing, but also of eliminating much of the framing that has heretofore been deemed unavoidable.

Treated Poles Have Long Life

No single application of treated wood has expanded as rapidly as poles. In 1909 only 659,664 cu. ft. of wood in the form of poles was subjected to treatment, whereas the volume of wood poles treated in 1929 was 77,154,317 cu. ft. or over 100 times as much. In fact, the volume of treated poles is nearly four times as great



Creosoted Hewn Texas Pine Ties After 20 Years' Service in Kansas



In This Creosoted Pile Trestle of 65 Bents Only Eight Pieces (Sway Braces) Were Cut in the Field

as that in treated construction timbers and ranks next to crossties as a major outlet for preserved wood. Because of the very rapidity of the development, service records on the life of treated poles are far from complete. Only a relatively small proportion of all the lines of treated poles erected have been in service long enough to develop their full useful life. A report published in the Proceedings of the American Wood-Preservers' Association for 1931 covers the service record of 1,594 poles in a line of the American Telephone & Telegraph Company between Montgomery, Ala., and New Orleans, La., that was built in 1899. Of these 1,594 poles, 773 had been or were to be removed but only 271 because of decay. The physical life of the poles is estimated at 36 years and the service life at 30 years. In another line of the same company in Virginia, 1,282 poles out of 1,523 poles were in service after 26 years, only 66 having been removed because of decay.

The fact that treated crossties released from tracks of European railways after long periods of service are not infrequently used as fence posts, is evidence of the value of treated wood as fence post material. Studies of test installations in this country were the basis for the conclusions offered in a paper presented before the American Wood-Preservers' Association convention in 1930 that: "The life of fence posts made from non-durable species can generally be increased to 20 or more years by giving them a thorough hot and cold butt treatment and a light top treatment of coal tar creosote." Experience with creosoted posts in right-of-way fences is responsible for reports to the effect that seasoned posts are not readily ignited by ordinary grass fires.

Many Other Uses

Opportunities for savings and for the conservation of wood through preservative treatment are by no means confined to the utilization of treated wood in crossties, bridge timbers, poles and posts. Creosoted wood blocks, while being used to a less extent for outdoor pavements than formerly, are being installed to an increasing extent for building floors. This is evidenced by the fact that the production of treated blocks in 1929-30 was greater than for any two consecutive years since 1920-21. Pole-line cross-arms absorb over a million cubic feet of treated wood each year. Among other important uses are tie plugs, crossing planks, drain boxes and culverts, trunking, etc.

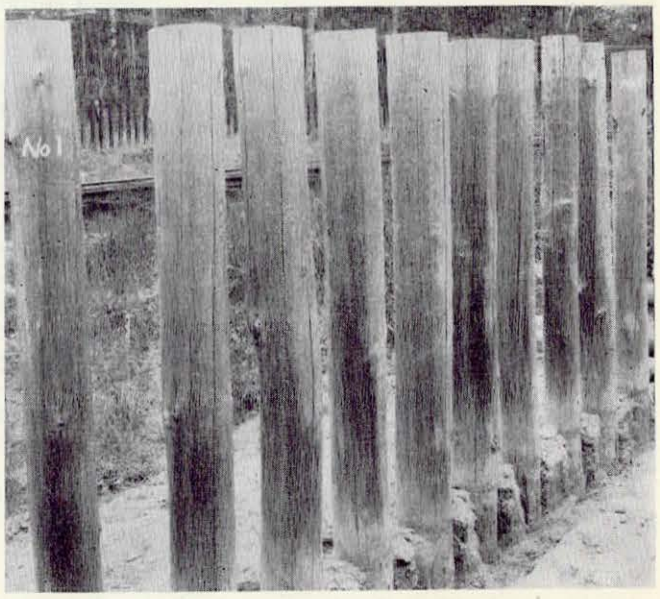
The Southern Pacific has in service some 600 creosoted wood-stave pipe culverts and more than 3,000 treated wood-box culverts, some of which have rendered good service for 35 years. The Illinois Central has obtained excellent results from creosoted southern-pine water-tank tubs, of which it now has 104 in service, while some roads have used treated wood in the tower frames for water tanks for years. Among newer uses for treated wood on the Santa Fe are moldings for switch wiring, blocks for switch protection, flat-car stakes and track-scale timbers.

Treated Wood in Car Construction

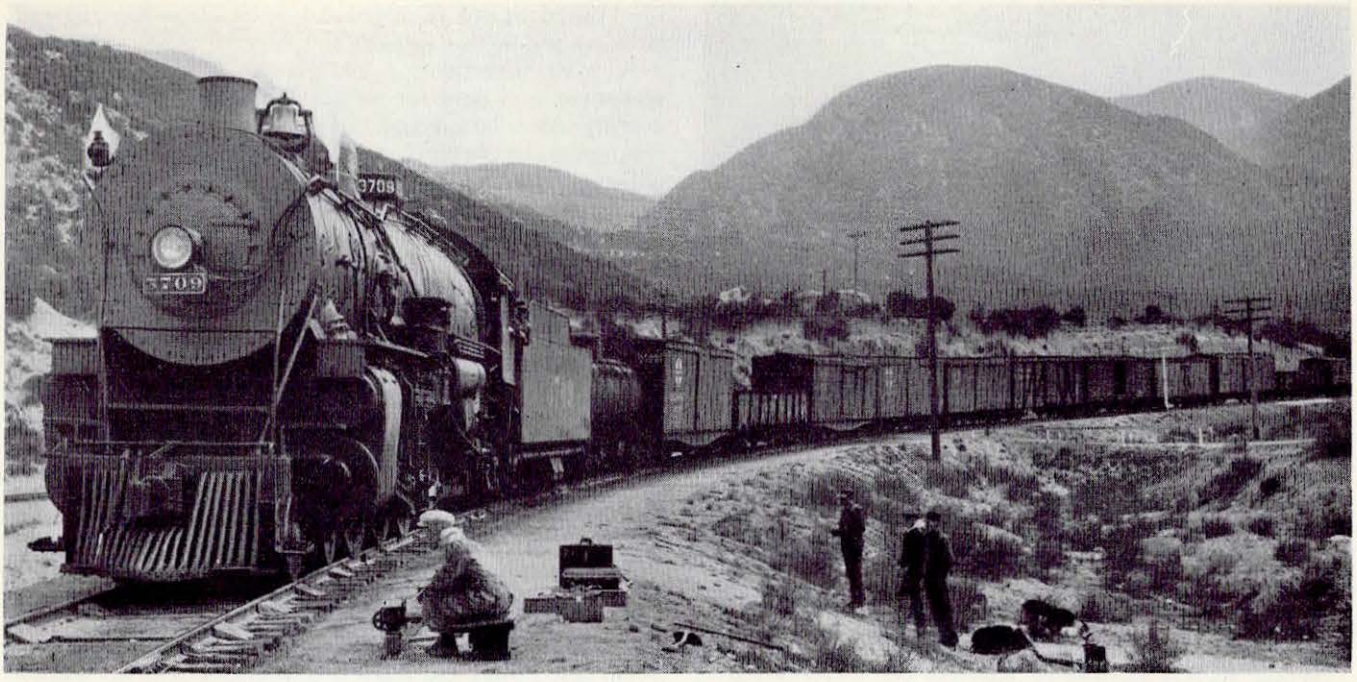
During the seven years 1924-30, inclusive, 7,124,021 ft. b. m. of treated wood was used in car construction and maintenance, most of it going into sills, the floors of stock and open-top cars, and the roofs of stock cars. This movement derived its impetus from the experience of the Chicago, Burlington & Quincy, which reported in 1926 that creosoted underframes and floors applied to stock cars 12 years earlier had given excellent service, and the practice seemed to offer a solution for the rapid deterioration of those parts of freight cars subject to rapid decay. The maximum activity in this field occurred in 1926-27, when 4,733,016 ft. b. m. of treated material was applied to cars, or more than half the amount applied in the entire seven years.

The fact that cars must be repaired at a great many locations and frequently on foreign lines, and the difficulty of maintaining stocks of treated lumber of the dimensions required or of providing facilities for open-tank treatment comprises a combination of obstacles that must be overcome before the benefits of using treated wood in cars can be realized. The objection to the use of creosoted wood because of the fear of contaminating the lading of cars can be met by the use of preservative salts which are now gaining favor for the protection of wood in building construction from termite damage where the creosote odor would be equally objectionable. Another stumbling block is the difficulty of compiling service records similar to those which have "sold" the treated tie to the railway managements. But on this point we offer the following comment by a railway officer who has had long experience in wood preservation,

(*Continued on page 974*)



Fence, Posts Treated 1.28 lb. of Zinc Chloride per Cubic Foot, After 14 Years' Exposure in Southeastern Texas



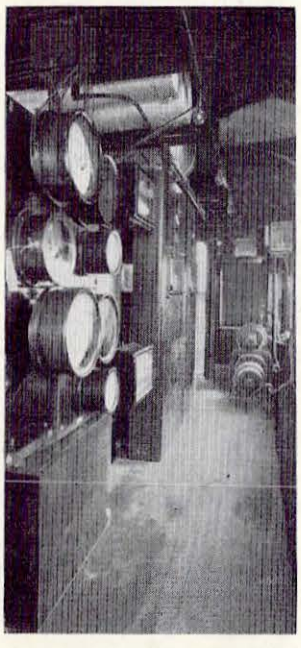
Test Crew Studying Stresses in Rails Under Load

The Problems and Possibilities of Railway Research*

Importance to railroads and effect on purchasing described — Notable experiments outlined and danger in curtailing work emphasized

By C. T. Ripley

Chief Mechanical Engineer, Atchison, Topeka & Santa Fe, Chicago

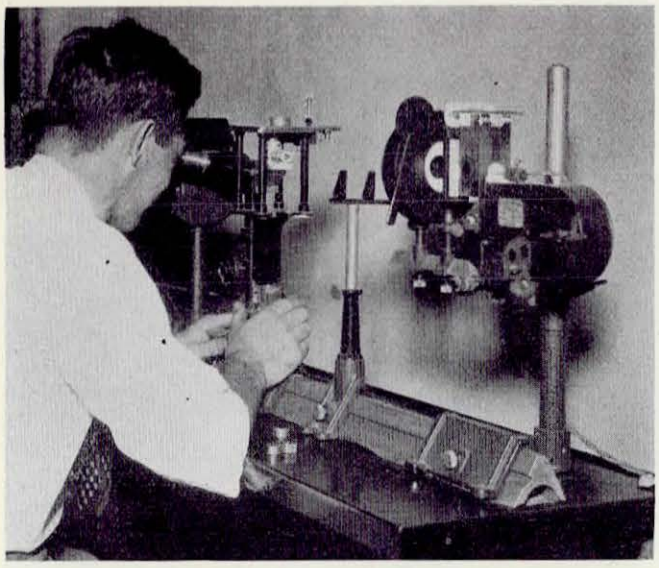


Power Plant Test Car

MUCH of the success of American industry in the past decade has been due to the work of research departments. Yet, it is only in recent years that American industries have taken an active interest in research. Formerly this work was carried on only in technical schools. In Germany, industrial research has been fully recognized for many years, and the commercial greatness of Germany, prior to the War, was undoubtedly due mainly to such work.

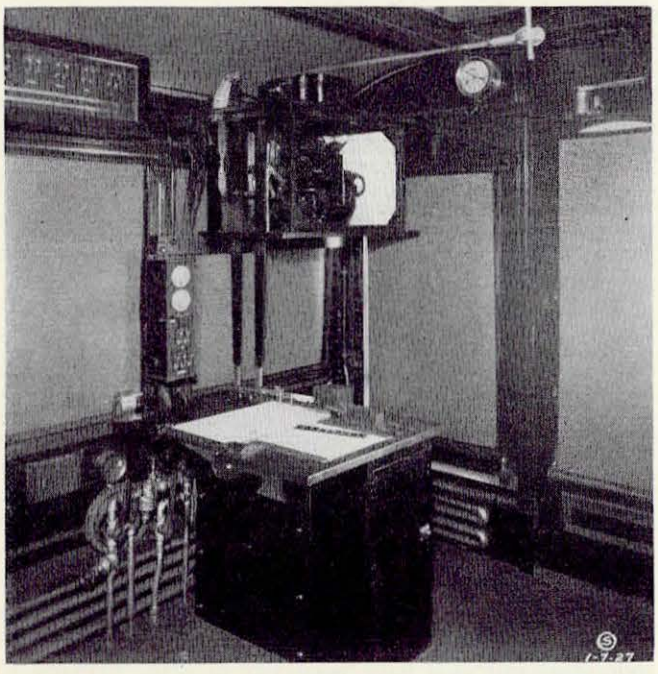
A number of years ago a movement was started to have the American Railway Association establish a general research laboratory under the jurisdiction of the General Committee of the Mechanical Division. There were many proponents of this idea but enough objections were raised to prevent the necessary appropriation to start it. An advantage urged for such a plan was that much money could be saved the individual railroads by centralizing this work instead of having the individual tests repeated by various railroads. The main objection was that the conditions on the different railroads were so varied that the results would not be of value. To my mind, this was not a strong argument. It is fully realized that after the laboratory tests are completed, service tests on individual railroads might be necessary but at least fundamental facts in regard to new devices could be thoroughly established in such a laboratory. The manufacturers would have an opportunity regardless of their sales ability to have these facts established. There have been entirely too many cases where inferior products have been pushed, through high-pressure salesmanship, and, as a result, individual railroads have been put to great expense to develop their weaknesses. This condition should be largely overcome through a central laboratory system.

* From a paper presented before the joint meeting of the Western Railway Club; Western Society of Engineers; American Society of Mechanical Engineers—Chicago Section; and American Railway Engineering Association; held December 14 at the Hotel Sherman, Chicago.



Metallurgist with Photomicroscope Examining Steel Structures at High Magnification

While such a laboratory has not yet materialized, a small start in joint research has been made in connection with the tests of air brakes, which was required by the findings of the Interstate Commerce Commission. In this case, the association appointed a director of research and used the laboratory facilities at Purdue University. Out of this plan, information on air-brake operation has been developed such as probably never would have been developed by any individual railroad organization, due to the heavy expense involved. Similar work is now being carried on in connection with automatic air, steam, and signal hose connectors. Work on draft gears has also been conducted since 1927 in a specially-equipped laboratory at Purdue university. This work is under the direction of the Coupler and Draft Gear Committee of the American Railway Association, and is based upon similar tests made by the United States Railroad Administration in 1918 and later by individual railroads.



Corner of Track Recording Car. The Twin Gyroscope Over the Record Table Maintains a True Horizontal Regardless of the Tilting or Swinging of the Car

A joint investigation of stresses in railroad track, sponsored and paid for by the American Railway Engineering Association and the American Society of Civil Engineers, has been in progress since 1913. This work is being done at the University of Illinois. Last February, an investigation of transverse fissures was also begun with a view to determining their cause. This work is also carried out at the University of Illinois and will extend over a five-year period, an expenditure of $250,000 having been appropriated equally by the American Railway Association—Engineering Division, and the Steel Rail Manufacturers' Association to finance the work. There is a probability of the handling of future investigations of other devices in the same way. Thus, we may ultimately see some central organization such as was proposed a few years ago.

The research of interest to railroads is not confined to the laboratories of the great industries and technical schools, however, but extends to all the experimental work carried on by individual railroads. The departments handling the work are generally called test departments. In them, the engineer is endeavoring to develop new things and learn new scientific truths. I doubt if many realize what these departments are doing and are prepared to do for the railroads.

Santa Fe Test Work Extensive

The test department of the Santa Fe is located at Topeka, Kans., which is the largest shop point. The organization consists chiefly of technical graduates who have had a thorough training in railroad work. Most of them, with the exception of the chemists, are graduate apprentices. The material inspectors are, as a general rule, not technical graduates, as their work does not require this particular training.

The equipment is extensive. It involves all of the numerous types of testing machines from small machines used for testing rubber to 600,000 lb. capacity machines used on heavy steel parts. A complete laboratory with specialized equipment necessary for concrete and cement testing is necessary. A drop-test machine for testing axles, wheels, etc., is also provided. We are approaching the time when equipment for testing draft gears will also be necessary, particularly for the study of gears which have been in service, in order to get proper reconditioning.

A good technical library is an essential part of the department as constant reference to technical publications is a necessity. The engineers are active in the work of the various associations, such as the American Society of Mechanical Engineers, the American Society of Testing Materials and the American Railway Association. They prepare and present important data for use in courts or before commissions. They prepare technical analyses of accidents or damage to freight for use in claim department work. Photographers and photographic equipment also add to the usefulness of this department. On the Santa Fe, we have used photographic records extensively in recent years and have also gone into moving picture work, the latter proving particularly useful in educational work.

Specifications Protect Purchasing

Among the major activities of the Santa Fe test department, however, are the drawing of specifications and the inspection of the material purchased by the road. These purchases amount to $67,000,000 per year on the Santa Fe. The development of the specifications has a

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distinct bearing on the price which must be paid. While it is desired to protect the railroad fully against inferior material, yet judgment must be used to avoid clauses which result in extra expense without any resultant benefit to the railroad. After developing the specifications, we send them to the various manufacturers for comment and criticism before they are finally adopted. Valuable information is secured in this way and mistakes are avoided. This does not mean that we always agree with the manufacturer, for at times we find that the criticism is based on selfish motives or the manufacturer lacks knowledge of the requirements of the user.

The specifications must be revised at fairly frequent intervals, as there are constant changes both in the process of manufacture and in the requirements of the service. Then again in the inspection of the material, judgment must be used. It is physically impossible to write a specification which fully covers every condition which may arise. There are limits, of course, to the extent to which an inspector can use his judgment, but a competent inspector understands these limits and does not put the manufacturer to unnecessary expense when there is no resultant benefit to the railroad. We have found in our dealings that an open and aboveboard policy is the only sound way to handle specifications and inspection of material.

Testing Mechanical Devices

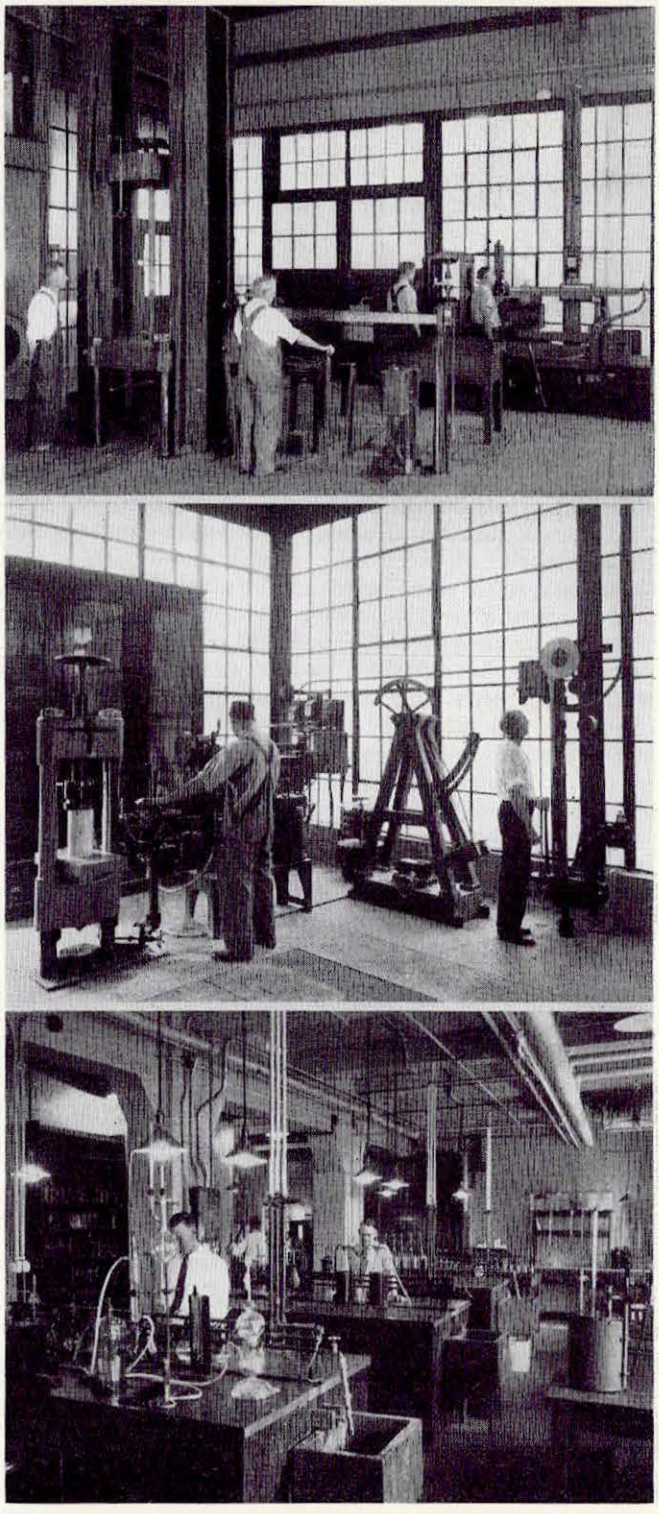
The second major function of the test department is the making of laboratory and service tests of various mechanical devices for cars, locomotives, shops, or other departments of a railroad. The manufacturer, after developing a device in his plant or laboratory, brings it to the officers of a railroad for their consideration. It is, of course, impossible to make laboratory or road tests of every device which is presented, for this would require an enormous organization. The executive officers must sift out those devices which have enough apparent merit to warrant the expenditures involved in testing. The railroad must then go through elaborate and expensive tests to fully demonstrate and develop a new device, since it is almost never that a device is brought to a railroad which is fully developed to meet its particular requirements.

The testing of these devices is ordinarily divided into two parts. The procedure is first to set up equipment in the laboratory to imitate service conditions as nearly as possible. With some simple devices, an absolute imitation of the service condition can thus be obtained. With many other devices, testing on the road is required. Conditions are frequently found in these road tests which were not anticipated in the laboratory work.

Dynamometer and Track Testing Cars

A dynamometer car is frequently used for these road tests as well as in the tonnage rating of locomotives. This car will record the pull of the largest locomotive and impacts of more than a million pounds at the drawbar. From the records taken with this car, a study is made of different types of locomotives in service to determine whether the maximum efficiency of locomotives is obtained and the amount of fuel and water consumed, the type of locomotive to be used for the service required on any particular territory, and the tonnage and number of cars in a train that can be handled most economically over different districts, considering class of locomotive, grade, fuel, water, and time between terminals. The car is also used in studying train resistance and the advisability of grade reductions, in testing the different types of brake equipment, in determining the value of various locomotive and car devices, and in the study of many other features of equipment and actual train operation vitally affecting the cost and efficiency of transportation service.

Another piece of equipment which is valuable in the



Analyzing and Testing Apparatus in the Santa Fe Laboratory

work of the test department is the track testing car. This car includes a Sperry gyroscope and several other units of equipment which required months to develop and perfect. As the car passes over the track, the mechanism automatically records by pens on a roll of paper passing over a table, the following data: The movement

of each rail from which low joints are located; the gage of the track, the cross track level, the time intervals upon which speed may be determined, and the location of the defective condition. The principal use of this track-recording device is to make a record of the conditions of the surface and gage of the track and also the results of these on the riding qualities of the car. These conditions are taken under load and speed, whereas ordinarily the trackman's measurements reflect the condition of the unloaded structure. Study and comparison of the records made by this car over sections where different weights of rails are used afford an unbiased record upon which to base recommendations for future purchases of materials or changes in standards of track maintenance. A blue print of the record showing the extent of each high and low spot and locating them exactly afford to section foremen the means of making the necessary repairs more accurately and quickly. The worst irregularities can be corrected first and the lesser ones later, and all of them are called to his attention.

A Test Laboratory for Power Plants

It is the policy of the Santa Fe to check the performance of the various power plants. The cost per pound of steam, the distribution of the steam generated, the relative cost of fuels as affected by different handling, and the accessories required are carefully investigated. Box shipments from plant to plant of sufficient instruments and other equipment necessary for complete power plant tests having proved to be wasteful of time and equipment and, in many cases, impracticable, a power-plant test car has been built which is equipped with sensitive instruments which indicate and record the amount of steam that flows from the boilers, temperatures, pressures, draft in fireboxes, and the smoke and heat that goes out of the stack. Other apparatus measures steam, water and compressed air as distributed to various facilities, while still other instruments measure the electrical output of generators. A gas calorimeter and gas-density balance are provided for analysis of natural gas at power plants where it is used for fuel. The gas analysis may be satisfactorily made on the test car. Samples of coal and fuel oil are forwarded to the test department laboratory for analysis. With the information thus obtained, the efficiency of the power plant and the costs involved are accurately determined. Irregularities of operation are corrected during the progress of the test. Desirable practices are disseminated among the different power-plant operators. The increased efficiency of the power plants reduces the cost of operation and improves the service rendered by the railway.

Track Studies Affect Locomotive Design

The equipment of the Santa Fe test department also includes stremmatographs for studying track stresses. These instruments, installed under the rails, produce a record of the stress produced in the rails as the locomotive or car passes over them. A record of the stretch is made on a smoked glass disc and this latter is measured under a microscope. As a result of the use of this machine, we have radically changed our locomotive design. We found first that the ordinary practice of equal loading of driving wheels was not correct. We now put the heaviest loads on the main drivers and taper down to the front and rear drivers. We also found that blind or flangeless tires produced greater stress in the track than the flanged tires. We therefore dropped the practice of using such tires on locomotives.

The most important development which came out of the use of this apparatus was the cross-counterbalancing of our locomotives. While this was the practice in Europe for many years, the American railroads did not follow it. We found by adopting this practice we were able to increase our driver axle loads by about 5,000 lb. per axle without increasing the stress in the rail. We are at the present time engaged in making a study of stresses under rail motor cars to establish the proper standard of maintenance for branch lines over which such cars operate. Important savings may result from this study.

Test Effect of Cold on Oils

The equipment of the test department of the Santa Fe includes a cold room and machine for testing lubricating oils under varying temperatures. The machine consists of a pair of wheels mounted on an axle with standard journals, journal boxes and brasses, and so designed that loads can be placed on the bearings and the wheels rotated as in service. This machine is placed in a specially-refrigerated room where temperatures as low as 50 deg. below zero F. can be obtained. Observations can be made and temperature readings taken without entering the room. A study of various oils with the aid of this machine showed in which of these oils stickiness and waste grabs were most predominant. It also showed that an oil can be produced which has a sufficiently high viscosity for summer service and yet does not become sticky and cause waste grabs at the lowest temperature experienced in the United States and Canada. As a result of this experimental work, three of the major oil companies have now installed similar cold-room testing plants at their refineries. The result of this work will undoubtedly be an improvement in car lubrication all over the United States, and, in fact, I think I can say conservatively that a real improvement has already resulted. It certainly has on our own road.

Whenever any parts fail on locomotives or cars, such parts are sent to the test department and there an intensive study is made of the broken parts to try to ascertain the cause and whether it is due to the design or to the quality of the material, and efforts are made to prevent recurrence. This work of the test department is of the greatest value. It results in constantly improved service and lower maintenance cost and is of help to the manufacturers in improving their product. We are constantly having representatives of the manufacturers study these results.

Wheel Studies Effect Important Savings

As an illustration of the large savings which have been effected through intensive studies of this character, our experience with car-wheel removals invites attention. This particular subject was investigated very carefully and each type of defect found in wheels was studied and analyzed until a complete set of data was available, which could be used to govern the condemnation of the wheels on the line. About four years ago, men were sent out to various points on the line to instruct the inspectors in the handling of this work. The result was that the savings amounted to over a million dollars the first year and have continued at approximately the same figure in the succeeding years.

Direction of Future Research

The demand upon research engineers at the present time is to develop equipment, track, etc., which will enable railways to give faster, safer and more comfortable service at lower costs to enable us to meet competition better. Practically all of the development work which is now going on is aimed at securing these results.

The use of high pressures in locomotives and power plants requires study. This development has come to us

from Germany and has now been applied to two locomotives, one in Canada and one in the United States. The indications are that fuel savings as high as 20 per cent may be secured from this construction, though, of course, much experimental work is necessary to perfect all of the design features involved.

We are seeing internal combustion engines applied to very large units of motive power and the use of both gasoline and Diesel engines is increasing. The high thermal efficiency of such engines results in radical fuel savings and, as the designs are perfected, it appears that improved maintenance savings will also result from their use. Continued experimental work by the various railroads is enabling the manufacturers to develop larger and larger units.

The use of lighter alloys, such as aluminum and other similar metals, will undoubtedly play a part in the future car construction and some very interesting experiments are being made at the present time. The use of alloy steels has been rather limited in railroad service, due to troubles which have been experienced, but they will undoubtedly have a distinct field in locomotive and car construction. The railway research engineers and those of the manufacturers, working together on this problem, may produce improvements which will result in economies in service performance. Improved equipment in railroad shops is necessary to accomplish the results. Springs, both elliptical and coil, are in need of further research work in order to secure better life and better riding qualities. Nitriding of steel has a promising field in reduction of maintenance expense of equipment, due to a reduction in the rapid wear of certain parts.

Air conditioning of cars, which is rapidly being perfected, promises greater comfort to passengers and thus added patronage. Automatic refrigerating devices for freight cars are in the process of development and will probably play a part in the improved handling of perishable products.

In the case of oils, experiments are being made with valve oils to overcome the tendency to form carbon deposits, which are productive of lower efficiency and cause increased maintenance. All-weather car oils are being developed, which will be satisfactory for every temperature condition, thus obviating the necessity for frequent repacking of the boxes and reducing hot-box failures. In the case of locomotive driving boxes, attempts are being made to utilize oil instead of grease. Experiments so far made indicate that a large reduction in frictional resistance and a decrease in the cost of lubrication is possible.

One of the outstanding defects in American locomotives is their inability to drift down heavy grades without the use of large amounts of steam. What is needed is a good by-pass valve.

These are only a few of the lines of experimental work which are now going on in both the manufacturing and railway research departments. They all are aiming toward the main objective of the railroad research engineer to reduce operating costs and improve the service performance.

Reducing Research Activities

During depression, there is a necessity for cutting costs in every way and some research departments have suffered from the reduction in forces as have other departments. However, I cannot help but make a plea that the greatest care be exercised before these particular activities are too greatly curtailed. The railroads are handcuffed with rate regulations and with wage-change barriers and the railroad officers in charge of these particular matters are waging their battle to the limit of their power. However, we are fortunate in that there is no barrier to the making of mechanical improvements; improvements which will give better service and thus attract patronage, or which will result in economies that will better enable the railroads to meet the unfair competition with which they are confronted. This avenue is still open and this is where the engineers must play their part in the battle. It is hoped that the managements of both railways and supply manufacturers will see this opportunity and realizing both what has been accomplished in recent years through research activities and what the possibilities are for the future, will not curtail them any more than is absolutely necessary.

Atterbury Analyzes I. C. C. Recommendations

CHANGES in regulatory laws recommended in the annual report of the Interstate Commerce Commission were analyzed by General W. W. Atterbury, president of the Pennsylvania, in an address delivered on December 15 before the Commercial-Merchants Club and the Beacon Society of Boston, Mass. The address, opening with a discussion of the New England railway situation with special reference to the Pennsylvania's position therein, proceeded to a consideration of the railway situation in general and thence to the analysis, with endorsement of some and criticism of others, of the I.C.C. recommendations. General Atterbury's closing remarks related to the depression.

In connection with the plight of the railways, General Atterbury said that there is acute need for an increase in traffic but he expressed fear that "there is no ground for anticipating it in the near future." Meanwhile he suggested it would be helpful if railway employees would accept voluntarily a ten per cent reduction in wages, if the Interstate Commerce Commission would give early approval to the Four-Party Plan of eastern railroad consolidation and if the financial aid recommended by President Hoover is forthcoming. With further recommendations suggesting that the Panama Canal Act and the Denison Act be amended to give the railroads freedom to engage in transportation by water, that all forms of transport be regulated in a manner similar to railways, General Atterbury proceeded to his analysis of the Interstate Commerce Commission's recommendations. An abstract of this portion of his address follows:

The Interstate Commerce Commission's annual report to Congress, as is customary, contains much that is of wide interest, and concludes with nineteen recommendations. Probably the most important is the first, which deals with the question of rates and "fair return." The Commission renews its recommendation of previous years, that the recapture clause of Section 15-A of the Interstate Commerce Act be repealed, and supplements its recommendation with specific expression of the view that the railroads should be allowed in prosperous years to accumulate some fat to carry them over the lean years. The Commission brings out the unsoundness of the present theory of rate-making, which aims to establish as nearly as possible a uniform return from year to year. The weakness of this is that it necessitates lowering rates in prosperous years, when business can stand higher rates, and raising them in poor years, when business can least afford them.

With these views and recommendations of the Commission I am heartily in accord.

The Commission also proposes to substitute a different kind of yardstick from that now prescribed by the Interstate Commerce Act, to be used in determining the earnings necessary to provide a "fair return."

The present wording of the Act simply makes the aggregate "value" of the physical properties of the railroads, either for the country as a whole or taken by groups, the base upon which rates are to be so adjusted. The Commission seeks to substitute for "value," in the ordinary sense, another measure of more artificial character which involves highly complex conceptions in accounting and valuation.

As briefly as I can describe it, the rate base proposed by the Commission, to take the place of ordinary "value," is to be arrived at by taking the cost of reproduction, new, of road and equipment at 1914 prices, add to that the 1914 value of the land, bring the total up to date by adding the subsequent net increase in carrier property, and then deduct what the Commission terms "the amount of the carrier's depreciation reserve." To this the Commission would add "a reasonable sum for working capital."

There are various reasons why I do not feel—and I think I voice the attitude of railroad executives generally—that we can afford to endorse this proposal. I realize perfectly well the tremendous difficulties involved in determining what real value is, as the word "value" is at present used in the Transportation Act. Nevertheless it keeps us on more or less known ground and continues to relate rate-making to the familiar principle recognized by the courts, that companies engaged in public service are entitled to be protected from the confiscation of their properties.

What the Commission now asks Congress to do is to give legislative sanction to a base for rate-making purposes which, on the precedent of conclusions heretofore expressed by the Commission, is something different from "value" as that word is ordinarily understood, and in that manner might have the effect of depriving the railroads of their constitutional safeguard.

In addition, we object seriously to the Commission's theory upon depreciation. The amount of depreciation which the Commission wishes to charge off in arriving at its rate base is extremely high. We on the railroads, on the other hand, do not concede that a railroad property, looked at in its entirety, depreciates at all if its respective components are properly maintained and replaced as required by wear, destruction and obsolescence—proper accounting for retirements being of course assumed.

I am in agreement with the Commission's second recommendation, which is that interstate passenger buses should be brought under federal regulation. I am glad to note that in connection with it the Commission announces its intention of promulgating recommendations for the regulation of common carrier trucks, in a forthcoming report on the coordination of motor transport. I trust the Commission will go a step further, as I believe it should and as I have already indicated, and recommended that its jurisdiction be extended not merely to common carrier trucks but to all trucks operating for hire, at least for purposes of more effective observation and study, to be followed by such active regulation as may be found wise.

Another important recommendation is that Congress institute an inquiry into the extent of government aid or subsidy, direct or indirect, being rendered to the competitors of the railroads. If this is done fairly and properly it may have important bearing upon questions respecting highway carriers. In the case of the inland waterways, I am confident that, if impartially conducted, it will bring out the fact that the government barge lines are being run at a serious loss, when all elements of cost are considered, and that the taxpayer is footing the difference.

The Commission also advised Congress to consider the question of the public regulation of port-to-port rates of carriers by water. I have already stated my views that such rates should be regulated as are the rates of the railroads.

The Commission seeks authority to delegate specific duties and powers to its individual members and employees. It is easy to understand that such a step would help this greatly over-burdened body in handling the enormous mass of detail which passes through its hands. May I venture the suggestion that perhaps a better remedy would be to relieve the Commission of many of the detail duties now devolving upon it?

Three separate recommendations are aimed at extending the regulatory authority of the Commission, in varying degrees, over forwarding companies, refrigerator car companies, and independent contractors employed by the railroads in performing part of their transportation service. An example of the latter would be a trucking organization rendering store-door delivery for a railroad under contract. The only comment upon these recommendations which I care to make is that if I were a member of the Commission I would consider the burdens which I was already called upon to share as being amply heavy.

Another recommendation, which I will not attempt to analyze in detail, is intended to give the Commission control over holding companies in so far as railroad stocks are concerned. It is difficult for me to understand how the public interest would be adversely affected by the mere ownership of railroad stock. If, however, it is thought that the character of such ownership might lead to acts detrimental to the public interest, may I suggest that it is the acts themselves which should be dealt with and not the ownership, particularly since I am informed there is grave doubt as to the constitutional power of the federal government to deal with the question of mere ownership?

The Commission proposes that Congress amend the portions of the Commerce Act relating to reparations on freight charges by materially shortening the periods over which reparations may be claimed. This is a constructive recommendation, not merely because it will save the carriers considerable loss of revenue, but also because it will lessen the number of reparations claims, and in that way materially reduce the onerous detail work of the Commission, of which these claims are one of the principal causes. Furthermore, I think that, considering the length of time during which the Commission has been regulating railroad rates, it is fair to assume that most of them have come under the Commission's scrutiny, and I do not believe that any injustice will result to shippers by shortening the periods over which reparations may be demanded. No reparations at all should be allowed on a rate already declared reasonable by the Commission.

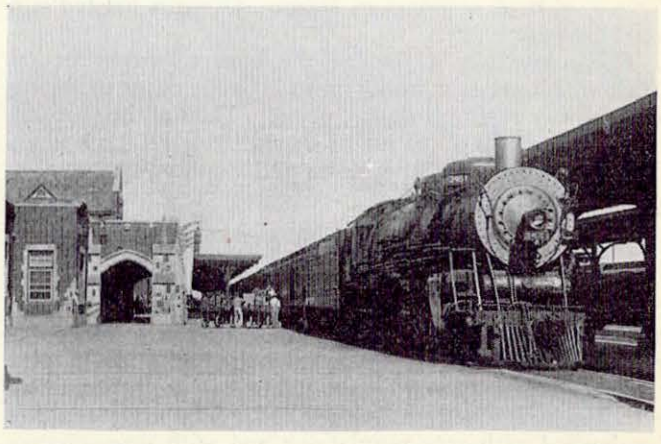
Dollars Spent for Treated Wood Are Returned Manifold

(*Continued from page 968*)

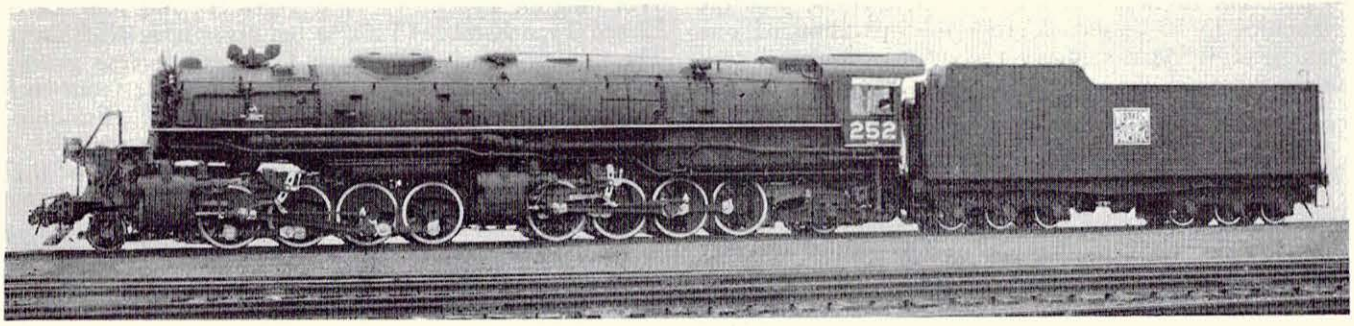
including the treatment of car lumber: "Anyone who is familiar with the destruction of wood by decay and who has observed the results secured from treated and untreated wood and has had an opportunity to make a comparison of both under actual service conditions and will make a close inspection of the various wood members being replaced in freight car construction, cannot help but be very firmly convinced that practically all wood members of freight cars, with the possible exception of box car siding, should be treated."

A return for the additional expense incurred by the use of treated wood is not realized until the lapse of a period equal to the life of the untreated wood for which it was substituted—say from 5 to 10 years. But railroad managements today are realizing large benefits by reason of the foresight of their predecessors who purchased treated ties and bridge timbers. These benefits will be increased from year to year as treated wood is applied in greater proportion for all uses that impose susceptibility to decay.

* * *



On the Atchison, Topeka & Santa Fe at Newton, Kan.



Western Pacific Simple Articulated 2-8-8-2 Type Locomotive Built by The Baldwin Locomotive Works

Western Pacific Operating 2-8-8-2 Types in Fast-Freight Service

Six locomotives recently purchased from Baldwin used on western division to replace 2-6-6-2, 2-8-2 and 2-8-0 type locomotives

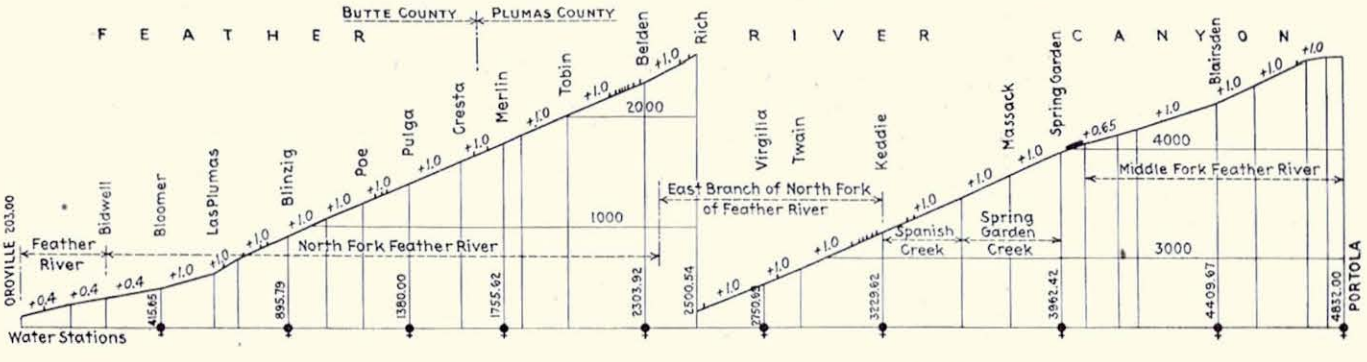
PRELIMINARY tests with the six 2-8-8-2 type simple-articulated locomotives, which were purchased last summer by the Western Pacific from the Baldwin Locomotive Works, indicate that the new power is handling the required tonnage with approximately the same fuel consumption as that used by two locomotives formerly employed to do the same work. Prior to the acquisition of the six new locomotives, trains were hauled from Oroville, Cal., to Portola on the third district of the Western division, by two compound 2-6-6-2 type locomotives, one 2-6-6-2 and one 2-8-2 type locomotive, or by 2-6-6-2 and 2-8-0 type locomotives, double heading.

The six articulated 2-8-8-2 type locomotives were purchased to replace these smaller type locomotives which were required for service over the northern extension which connects the Western Pacific with the Great Northern at Bieber, Cal. This extension was placed in operation November 10, 1931, an account of the opening of which was published in the November 14 issue of the *Railway Age*.

The new power is designed to handle the greatest possible tonnage in the Feather River Canyon, in which territory, as shown in the profile drawing, there is a maximum one per cent opposing grade to the eastbound traffic. Each of the new 2-8-8-2 type locomotives is required to handle 4,000 tons in drag service over this district of 118 miles and 3,750 tons in perishable freight-train service at the maximum speed permissible in this territory.

They represent the maximum that could be provided within the restrictions of curvature, grades and clearances. Of the 118 miles of track in this district, 63 per cent is curved, the maximum curvature being 10 deg. The new locomotives are designed for operation on grades as steep as 2.2 per cent and can pass around curves of 16 deg.

The preponderance of traffic in the eastbound direction is perishable business and, of course, must be handled with minimum delay. Inasmuch as each of the new locomotives will displace two locomotives formerly used to haul the same tonnage, there is a saving of over



Profile of the Line Between Oroville and Portola—116.31 Miles

The third district of the western division between Oroville, Cal., and Portola, Cal., has 32 tunnels the longest of which is located east of Spring Garden, Cal. It is 7,317.69 ft. long. The locations of the tunnels are indicated by the vertical marks on the profile line. This district has a total of 385 curves of which 49 are between Oroville and Las Plumas, 101 between Las Plumas and Belden, 111 between Belden and Keddie, 56 between Keddie and Spring Garden, and 68 between Spring Garden and Portola. Of the total 116.31 miles, 4.14 miles are through tunnels, 14.27 miles are on curves from 6 to 8 deg., and 9.85 miles are on curves from 8 to 10 deg. Only 46.03 miles are tangent track.

50 per cent in time at fuel and water stops, plus the economies to be expected from the operation of one locomotive, modern in every respect, as compared with two locomotives designed and built some years ago.

Features in the Construction of the Simple 2-8-8-2 Types

It will be observed from the table showing the comparative dimensions and weights of the new and replaced locomotives that the increased capacity and efficiency was secured with comparatively little increase in weight per pair of driving wheels. The weight carried on the drivers by the 2-8-8-2 type is 552,700 lb., as compared to 356,500 lb. for the compound 2-6-6-2 type and 249,000 lb. for the 2-8-2 type.

The tractive force of the 2-6-6-2 type is 80,000 lb., which, together with the tractive force of 60,300 lb. of the 2-8-2 type, plus the tractive force of the latter's booster of 11,000 lb., provides a total combined tractive force at starting of 151,300 lb. when these locomotives were double-headed together.

The rated tractive force of the new 2-8-8-2 types is 137,000 lb. The trailing trucks of the new locomotives are equipped with Franklin boosters which provide a tractive force at starting of 13,900 lb. Thus, a total tractive force of 150,900 lb. is developed by the new locomotives, which is only 400 lb. less than that developed by the best combination of power previously used.

The 63-in. driving wheels of the 2-8-8-2 types permit running speeds comparable with the 2-8-2 types and faster than the 2-6-6-2 types. The boiler pressure has been increased to 235 lb., as compared with 200 and 190 lb. for the locomotives displaced. All four cylinders of the new locomotives are 26 in. by 32 in.

Two of the new locomotives are equipped with Worthington Type S feedwater heaters and four have Elesco Type K-60. All six locomotives have Nicholson Thermic syphons, Alco Type G power-reverse gears, Type A superheaters, and American multiple front-end throttles. Thomas oil burners are applied. Franklin lateral-motion driving boxes are used on the rear driving wheels of the front unit and the front drivers of the rear unit, to facilitate the negotiation of the sharp curves in the Feather River Canyon district.

The power-reverse quadrant is arranged for a maximum cut-off of 85 per cent and is then blanked back to a cut-off of 70 per cent. The booster is automatically cut out as soon as the cut-off is reduced below 85 per cent.

The engine truck is of the swing-bolster type with outside journals. The load on the engine truck is transferred through a single spring mounted on top of the truck center pin and above the deck plate. The front spring link is pinned to the deck plate and the rear spring link is connected to the forward equalizers.

The tenders are of the rectangular water-bottom design with cast-steel frames manufactured by the General Steel Castings Corporation. They have a capacity for 22,000 gallons of water and 6,000 gallons of fuel oil.

Principal Weights and Dimensions of the Western Pacific Simple Articulated 2-8-8-2 Type Locomotives Built by The Baldwin Locomotive Works Compared To Those of the Locomotives Displaced

Type of locomotive	2-8-8-2	2-6-6-2	2-8-2	2-8-0
Service	Freight	Freight	Freight	Freight
Rated maximum tractive force	137,000 lb.	80,000 lb.	60,300 lb.	43,300 lb.
Tractive force, booster	13,900 lb.	.....	11,000 lb.	.....
Combined tractive force at starting	150,900 lb.	.....	71,300 lb.	.....
Weight on drivers ÷ max. tractive force	4.03	4.47	4.12	4.24
Cylinders, diameter and stroke	4—26 in. by 32 in.	2—23½ in. by 32 in. 2—37 in. by 32 in.	28 in. by 30 in.	22 in. by 30 in.
Valve gear, type	Walschaert	Walschaert	Walschaert	Walschaert
Weights in working order:				
On drivers	552,700 lb.	356,500 lb.	249,000 lb.	184,000 lb.
On front truck	48,700 lb.	25,500 lb.	25,500 lb.	19,000 lb.
On trailing truck	63,700 lb.	47,500 lb.	57,500 lb.	.....
Total engine	665,100 lb.	429,500 lb.	332,000 lb.	203,000 lb.
Total engine and tender	1,076,600 lb.	637,800 lb.	599,000 lb.	358,000 lb.
Wheel bases:				
Driving	43 ft. 10 in.	31 ft. 2 in.	16 ft. 6 in.	15 ft. 8 in.
Rigid	11 ft. 0 in.	10 ft. 4 in.	16 ft. 6 in.	15 ft. 8 in.
Total engine	61 ft. 5 in.	49 ft. 10 in.	36 ft. 3 in.	24 ft. 4 in.
Total engine and tender	108 ft. 0 in.	86 ft. 5¾ in.	73 ft. 2½ in.	60 ft. 0 in.
Wheels, diameter outside tires:				
Driving	63 in.	57 in.	63 in.	57 in.
Front truck	36 in.	33 in.	33 in.	30 in.
Trailing truck	42 in.	43 in.	43 in.	.....
Boiler:				
Type	Straight top	Straight top	Straight top	Straight top
Steam pressure	235 lb.	200 lb.	190 lb.	190 lb.
Fuel, kind	Oil	Oil	Oil	Oil
Diameter, first ring, inside	101⅛ in.	88 in.	82 in.	78⅜ in.
Firebox, length and width	204⅛ in. by 102¼ in.	108⅛ in. by 96¼ in.	120⅛ in. by 84¼ in.	121 in. by 40 in.
Combustion chamber, length	72 in.	88 in.	36 in.	.....
Tubes, number and diameter	272—2¼ in.	235—2¼ in.	213—2¼ in.	217—2 in.
Flues, number and diameter	75—5½ in.	36—5½ in.	45—5½ in.	36—5½ in.
Length over tube sheets	23 ft.	24 ft.	18 ft.	13 ft. 11 in.
Grate area	145 sq. ft.	72.2 sq. ft.	70.3 sq. ft.	33.6 sq. ft.
Heating surfaces:				
Firebox and combustion chamber	522 sq. ft.	360 sq. ft.	284 sq. ft.	218 sq. ft.
Arch tubes	.....	26 sq. ft.	15 sq. ft.	.....
Thermic syphons	217 sq. ft.	.....	92 sq. ft.	.....
Tubes and flues	6,141 sq. ft.	4,550 sq. ft.	3,407 sq. ft.	2,074 sq. ft.
Total evaporative	6,880 sq. ft.	4,936 sq. ft.	3,798 sq. ft.	2,292 sq. ft.
Superheating	2,152 sq. ft.	1,051 sq. ft.	973 sq. ft.	733 sq. ft.
Combined evaporative and superheating	9,032 sq. ft.	5,987 sq. ft.	4,771 sq. ft.	3,025 sq. ft.
Tender:				
Type	Rectangular water bottom	Rectangular water bottom	Rectangular water bottom	Rectangular
Water capacity	22,000 gal.	12,000 gal.	15,000 gal.	8,000 gal.
Fuel capacity	6,000 gal.	4,000 gal.	4,000 gal.	3,000 gal.

The Alabama, Tennessee & Northern will, on January 1 establish a car ferry service across the Mobile river, thereby extending the switching limits of Mobile to Blakely Island on which the railroad owns deep water frontage and making it possible to develop the property industrially. The first industry to be located on the property is an oil refinery of the Coastal Petroleum Corporation which will produce about 600 cars of products per month.

Bureaucracy's
Increasing Power

Threatens Private Ownership*

By E. A. Jack

Growth in regulatory strength and zeal endangers shippers as well as railways—Co-operation of carriers and patrons would end the menace—A plan for mutual action

GOVERNMENTAL solicitude is a poison. It is a mesmerism surreptitiously injected, and its victim seldom awakes before he has surrendered his individuality and finds himself forced to appeal for help to the very influence which enslaved him. How clearly this is illustrated in the condition of our farmers today. The farmer was originally the brain and sinew of this country. His ingenuity, resourcefulness and courage founded it. Then he listened to and followed the sirens of political solicitude and thereby sold his birthright for a mess of pottage. The theme that the farmers are a poor, helpless, downtrodden people has been played upon so consistently and persistently that the farmers have come to believe it themselves, and by accepting this insidiously solicitous paternalism, the farmer has reduced himself to a state of practical helplessness.

Government Ownership Inevitable If Inertia Persists

What federal paternalism has done to the farmers it is now doing to the railroads, but from a different motive. There is little immediate prospect of nationalizing the farming industry—for the present at least, their separateness better serves political ends; but every move of the government and its agencies since 1906 has been toward the government ownership of the railroads. The railroads are now so hamstrung by legislation and bureaucratic dominance, which work entirely at variance with the laws of transportation economics, that they are practically paralyzed and unless some way is found to release them from such uneconomic legislation and dominance, government ownership is inevitable. Unless authority and responsibility go fully hand in hand the result is always disastrous.

During the period since March 1, 1920, we have seen the operating departments of the railroads, unhampered by bureaucratic dominance, convert the corpse of a governmental experiment into a live, virile thing giving the people a transportation service unparalleled in this or any country, and one which should have resulted in financial prosperity to the carriers. But this fine effort was completely atrophied, so far as financial returns were concerned, by the separation of authority and responsibility in the sales end of the railroad business.

People who really do their own thinking individually or collectively usually maintain their independence, but in just the degree that they permit others to think for them, they unloose the forces which will eventually reduce them to a state of vassalage. A government bureau once established and clothed with some supervisory power is looked upon at once by our non-thinking populace as a divine institution, and the bureau must maintain the position of a demi-god or it cannot continue to exist. It is unfortunate, but nevertheless true, that a supervisory bureaucracy never assumes or acknowledges any responsibility for failure but always shifts that responsibility to some phase of the thing supervised which it does not control.

Bureaucracy Thrives on Public Indifference

In private business responsibility is definitely fixed and goes hand in hand with authority, but there is no known way by which a governmental body can be held to strict account. Its master is that most intangible thing called "the public". The tenure of its officers is not dependent upon efficiency, but is fixed by statute, and regardless of their inefficiency, they stay put for the term prescribed in the statute. Its stockholders, the public, have no individually direct interest in its management; there is no stock upon which dividends must be earned and paid. Its capital stock is public favor, or, better still, public indifference, and the only returns the public expects is to be saved the trouble of thinking about it.

Episodes of high finance, rebating and other discriminatory practices by the carriers prior to 1906 had produced a most deplorable situation, and political spellbinders and sensational newspapers had thoroughly convinced the public that the railroads were rotten to the core. Hence no bureau was ever launched into real power under more auspicious circumstances than the Interstate Commerce Commission. The setting was simply perfect, and from 1906 to date the transportation laws and their administration have all been directed to one end, namely, government ownership—not deliberately perhaps, but nevertheless effectively.

From 1906 to 1918 this tendency took the form of severe castigation. In fact, the decisions of the Commission during this period were so notoriously pro-shipper that railroad owners were very much concerned, —it looked like confiscation. The period of federal control gave the owners a breathing spell and an opportunity to take stock. Had the government made a success of operating the roads during federal control, the roads would not have been turned back, but in the face of so colossal a failure there was no chance of getting the public to stand for it.

* This forceful exegesis by the general traffic manager of one of our largest industries is presented not only because of its interesting recommendations but also in the hope that it may stimulate discussion of the railroad problem from a viewpoint from which all too little has been heard during the present crisis, to wit, that of shipper-carrier co-operation. —EDITOR.

So when the time came to turn the roads back, the owners knowing from the past what to expect in the future, demanded that they be given some sort of protection and Section 15 (a), with its empty and utterly impractical, wrongly called "guarantee" clause, was the result. In agreeing to Section 15 (a), the carriers drove several nails into the coffin being assiduously prepared for private ownership. To obtain this perfectly empty guarantee, the railroads accepted the socialistic recapture clause. What they did not foresee was that while the recapture clause would work in fat years, the guarantee clause would not work in lean years. It was a case where "if heads, the government would win and if tails, the railroads would lose".

Government as a Judge of Private Efficiency!

The forces of bureaucracy by this time were too firmly ensconced to let pass so splendid an opportunity to advance the cause of government ownership. Depriving capital of its proper and constitutional rights so as to disgust it with railroads as an avenue for investment was only one means; the opportunity to discredit capital's ability to manage its affairs must not be overlooked, and so there was incorporated that, oh! so innocent, and shall we say euphemistic phrase, "—under honest, efficient and economical management and reasonable expenditures for maintenance of way, structure and equipment—". A governmental bureau to sit in judgment as to the efficiency of private operation!

The next outstanding drive against private ownership was the famous Hoch-Smith resolution. "Joke-Smith" would have been a better name. This resolution is probably the most outstanding piece of deliberate legislative chicanery in congressional history, and the very fact that the United States Supreme Court has rendered it innocuous, has anomalously made it all the more vicious. Taken literally it is harmless, because it proposes an utterly impracticable scheme of rate making, but it never was intended to be taken literally. It is a private message from the parent to its child, properly disguised for public presentation. Stripped of its camouflage, this resolution instructs the Commission to reduce rates on products of farms and increase them on other commodities to compensate.

It is a well-known fact that the preponderance of the revenue of Western and Southern roads is earned on products of agriculture, while the preponderance of the revenue of the Northern and Eastern roads is derived from the products of other industry. Hence, decreasing the rates on farm products and increasing them on manufactured articles would impoverish one set of roads while enriching another set, with no way to effect a compensation. It does not take a Solomon to see the opening that gives for government ownership propoganda. The plain fact that the inevitable impoverishment and probable receivership of many of the western and southern roads will have been brought about by political chicanery and not in the least by failure of private management will be utterly ignored because the political and bureaucratic trend is toward government ownership.

Why should the private capital invested in railroads be conscripted to subsidize the farmer or anyone else? All other forms of business have had to fight their own economic battles. We do not find great political concern over the present depressed price of copper. We do not find the Interstate Commerce Commission planning to reduce the freight rates on copper, but the indications are quite to the contrary. Now if farming is to become a nationalized institution, why not grant it a direct subsidy from the United States Treasury? This would at least permit our transportation system to function in accord with economic laws instead of political expediency and so benefit both the railroads and the farmers.

Is the Only Cure for Bureaucracy More Bureaucracy?

The long and short haul clause, while apparently fair and innocent, becomes in practice a severe hindrance to private operation. The Pacific Coast situation is an outstanding illustration. The transcontinental carriers are being gradually starved by intercoastal water competition. But, owing to the "dog in the manger" attitude of the intermountain territory, bolstered up by the Hoch-Smith resolution, the carriers are prevented from meeting this competition, which they could do in many instances with profit to themselves. But, instead of permitting the free play of economic law, the proposal is now advanced to hamstring the intercoastal lines, force up their rates, and so deprive both the Atlantic and Pacific coasts of their natural advantages. Truck competition presents a similar situation and the same remedy is proposed. In other words, as governmental bureaucracy is no match for private resourcefulness and ingenuity, then private resourcefulness and ingenuity must be stamped out.

At a time when everything should be done to assist in the apparently necessary deflation we have the Commission forcing upon industry a mileage scale of class rates, the child of exasperation, which will decrease some interterritorial rates but increase other rates as much as 40 per cent; and at a time when everything should be done to build up confidence, the Commission launches its investigation into railroad practices, the hearings thereunder savoring far more of the Inquisition than of any sympathetic desire to "come now and let us reason together."

And so goes on the steady tendency to individual submergence into a paternalistic communism. Our process is prolonged and rendered somewhat painless by insidiously administered doses of laughing gas, alias legal procedure, but the destination is the same that Russia has in view and is approaching by more direct and painful methods. All of which is to say that the seeming forces of inaction, reaction, inertia and decadence are actively at work, their objective being governmental ownership of everything in general, but at present of the railroads in particular. And this is being done right under the noses of industry which is fundamentally opposed to government ownership.

Traffic Managers Exaggerate Freight Rates' Importance

Notwithstanding the fact that industry is utterly opposed to government ownership theoretically, it has been deliberately feeding the flames of government ownership. It has been doing this by running to the Commission on the slightest provocation or even without provocation, making veritable mountains out of inconspicuous mole hills, until everybody, including the individual industrial traffic manager, has gotten a highly exaggerated idea of the importance of freight rates. The Commission has been literally swamped with complaints, and audit bureaus and commerce attorneys have thrived and multiplied.

This has reacted unfavorably upon the traffic profession, for it has produced the idea that the value of a traffic manager is measured by his ability to get his rates reduced, which if true would place a very definite limit to his value.

Prior to 1906 railroad rates generally were constructed to develop trade areas or commercial and manufacturing districts. Such a rate structure must of necessity be

very flexible and a flexible rate structure affords many opportunities for charges of discrimination. The very nature of a bureau renders it inflexible, hence it is forced to do one of two things; either put everybody on an identical basis,—the postage stamp theory; or adopt some basis upon which differences may be computed mathematically,—the mileage theory. As the postage stamp theory is utterly impracticable, we find the Commission's decisions running more and more to the mileage theory, and insofar as freight rates are the governing factor, this means a decentralization of industry, and probable loss of investments in plants and homes.

We have tried unrestrained private management; we have tried federal operation; and we have tried governmental suzerainty, each of which has proved a failure. What we have not tried, and it is a surprising thing that we have not, is some plan of cooperation between those most vitally interested, viz., the railroads and the shippers.

Some way should be found for shippers and carriers to meet on common ground and work out their joint problem through machinery set up for and by themselves, which machinery will tend to eliminate the Interstate Commerce Commission's influence by ignoring it, rather than running to it, as both shippers and carriers have been prone to do.

The salesman must keep the good will of his customer; especially is this true in a highly competitive field. It takes a lot of selling tact to refuse a good customer's request and real ability to show that customer why it is refused. Unfortunately, all of our railroad traffic friends are not such able salesmen. They are anxious to give service and this willingness to serve is not always tempered with discretion. As shippers are not always wise in the requests which they make, things are done which would otherwise not have been done, and some of which are open to severe criticism. Again, our methods of making rates, based on comparison with other rates rather than on some fixed basis, provides vast fields from which the resourceful industrial traffic mind may plow up instances of prejudice and discrimination.

We Rob Peter to Pay Paul—Process Must Be Reversed

So we are presented with this pitiful and anomalous situation: The shipper and carrier, with interests fundamentally the same, both definitely and positively opposed to government ownership, instead of joining hands against a common enemy are kept apart by a rather undefined mutual distrust and the indulgence of selfish interest. No wise purchaser of goods, if he values the product purchased and desires to have the source of supply continue, drives a bargain which will cut off that source of supply. The sound and solid business world has always recognized the great fact that unless every party to a transaction profits, it is poor business in the long run for all concerned. We can rob Peter to pay Paul for just so long, then Paul must be robbed to pay Peter, and interest charges must be added to distrust and ill will.

Let us see if we cannot, as sensible, rational people, get together and devise some means for breaking down the prejudice and distrust which is the result of past accusations and recriminations, and so present a united front against the heavy hand of tyrannical government—and so, by hanging together, prevent our being hung separately, I offer the following as a means to this end:

If the shipping public is to be healed of its "reduction in rate" fever, some means must be provided whereby the individual shipper can be shown and convinced just what his rights are in a given rate proposition and so be deterred from running to the Commission with a complaint. To do this we must set up some machinery in which he has confidence. This is not going to be an easy task but it can be done if it is approached in a sincere manner.

A Concrete Plan to Minimize Appeals to I.C.C.

I suggest, therefore, that the remedy for this situation is the setting up of some joint carrier-shipper organization which will work to a mutually desired end, and I beg to offer a brief outline of a plan by which we can accomplish this. The plan to be really effective must be national in scope for both carriers and shippers. The carriers have the necessary organization now which would require practically no changes, but the shippers have no such organization and one would have to be built up from the ground. The shippers' organization should be built about as follows:

(1) Organize district industrial traffic committees in every city or community where there are a sufficient number of industrials located, and particularly in cities in which railroads have District Committees—these district industrial committees to be affiliated with and to report to a central body as outlined in (2).

(2) Organize industrial traffic leagues in each major rate territory, for instance, Central Freight, Western Trunk Line, etc. These would be regional organizations and would be known as Central Freight Industrial Traffic Leagues, etc. We now have several such regional leagues, the New England Traffic League, the Southern Traffic League, the Texas Traffic League, and there may be others.

(3) Organize a national league into which the regional leagues would lead. The national organization to be supported by the regional organizations. The district and regional organizations to be composed of industrial representatives as individuals, but the national organization to be composed of delegates elected or appointed by the regional leagues, the idea being that if a man is elected as a delegate representing a group, the natural tendency to think principally in terms of his own particular job would be less pronounced. In other words, the national organization's work should deal largely, if not entirely, with principles rather than cases.

(4) Each district and regional organization to have a Rate Review Committee and the Rate Review Committee, in turn, to have a Rate Contact Committee whose function would be to handle disputed rate cases with a similar committee to be appointed by the carriers.

(5) The national organization to have an executive contact committee whose function would be to work with a like committee appointed by the carriers to work out practices looking to the general common good. These two committees, one of the industrials and the other of the railroads, to be jointly known as the Executive Freight Traffic Committee.

The idea of the scheme is purely educational and cooperative and designed to promote a general feeling of mutual confidence. Under the plan a shipper would apply for the rate desired directly to any properly interested carrier he might choose. If dissatisfied with the carrier's decision, he would then present his case to the Rate Review Committee of the district committee if he were located in a district, or directly to the Rate Review Committee of his regional league if he were not located in or tributary to a district. The Rate Review Committee would study the situation and if they agreed with proponent would turn it over to the Rate Contact Committee, who, in turn, would meet with the railroads' committee. If the respective railroad or shippers district committee could not agree, then the matter would be referred to the regional committee, and so on up to the Executive Committee if of sufficient importance.

It will readily be seen that this plan is very different from the rate committee composed jointly of representatives of railroads and carriers set up by the Director General of Railroads during federal control. Nothing about the scheme is intended to be either dictatorial or

obligatory. Any shipper or carrier may take his case or cases directly to the Commission if he prefers. My idea is to bring the two parties together in a spirit of amity and co-operation. I have no Utopian ideas about it. I realize that there are years and years of unfavorable ground to be tilled and replanted, and I fully realize that it will take a lot of patience and hard work on both sides. But I firmly believe that if the idea takes root sufficiently to give it a reasonably fair start, much good can be accomplished. It is possible that if such a plan is deemed feasible, the National Industrial Traffic League might find it advisable to revamp its organization so as to provide a shippers' organization such as is outlined above, which would parallel the railroad organization, and some parallel organization must be established if the shippers and carriers are to really and truly cooperate in solving our transportation difficulties.

What I propose is not a revolt against the Commission but a revolt against those suggestions in ourselves which would have us believe that we are incapable of managing our own affairs, and that we co-operate to a common end to make the Commission unnecessary in these rate matters. While the plan deals principally with rates, the proposed set-up would soon broaden out so as to include the whole fabric of joint relationship between carrier and shipper in transportation.

Efforts to Avert Receiverships

President Hoover makes specific recommendations— Congress will not act until after the holidays

WASHINGTON, D. C.

BY way of reassurance to railway investors, direct and indirect, President Hoover on December 18 read to the press a statement summarizing the efforts being made to avert more railway receiverships and emphasizing that "altogether this problem is receiving most serious attention." To this some of the newspapers automatically added the words: "by the Administration". Beyond what has been done by the Interstate Commerce Commission to allow the roads a temporary increase in freight rates and by the Railroad Credit Corporation in plans for loaning so much of the proceeds as may be necessary to meet interest charges, the President indicated that the Administration part of the program is to press for the passage of the bills creating the Reconstruction Finance Corporation, which may make loans to railways unable to obtain funds to meet maturing principal obligations upon reasonable terms through ordinary channels, and he said he regarded the enactment of the authority to create this corporation as a most urgent matter. The President also referred to the possibility of an agreement between the railways and the labor organizations in language indicating that he is no longer opposed to the idea of some wage reduction. The President said:

President Hoover's Suggestions

"In consequence of the fall in prices of railway bonds, I have a number of telegrams from different parts of the country and inquiries from the press as to the status of the various agencies which are proposed to assist those railways which are not earning their fixed charges across the trough of the depression without further consequential defaults on bonds or receiverships. These inquiries are natural, because the standing of railway bonds is a fundamental matter to thousands of publicly owned institutions. As shown by the Interstate Commerce Commission, excluding those roads already in receivership, the number of railways earning less than fixed charges is only about 16 per cent or 17 per cent of the whole. This, however, includes some roads that are parts of larger systems able to look after them. It will be remembered that the carriers have now organized the Railway Credit Corporation on the plan provided between them and the Interstate Commerce Commission for assisting railways with deficient earnings from the special income authorized by the Commission. This income is estimated at something over $100,000,000. The Railway Credit Corporation has been approved by the Railway Executives and the Commission, and is now in course of the confirmation by the Boards of the different railway companies. Proposals are in progress by which financial assistance can be provided by the Railway Credit Corporation in anticipation of the collection of the increased rates assigned for this purpose.

"Beyond this, the Reconstruction Finance Corporation which I have proposed to the Congress, aside from its purposes to aid agricultural credit associations and the export of agricultural commodities and other stiffening of the credit situation, will under those recommendations be able to give emergency aid in this situation also if it should be necessary. I, of course, regard the enactment of the authority to create this corporation as a most urgent matter.

"It is my understanding that progress is being made on the proposal from the Conference of Railway Brotherhoods at Chicago that they should appoint a committee with power to act with the railway executives on wage questions, subject to confirmation of their locals, and that the railway executives are likewise appointing a committee with power to act on their behalf.

"Altogether this problem is receiving most serious attention."

More detailed information regarding the progress being made by the Railroad Credit Corporation was given the President later in the day by E. G. Buckland, president of the corporation, and on the following day Daniel Willard, chairman of the committee appointed by the railway executives to negotiate with the labor committee, called at the White House to inform the President of the progress being made toward an agreement on a wage reduction. Mr. Willard expressed confidence in a satisfactory outcome of the negotiations, saying that there was a reassuring prospect that they

might result in making available some $200,000,000 toward enabling the railroads to meet their fixed charges next year or toward enabling them to employ more men on maintenance work to the extent that the money is not needed to meet interest requirements, in addition to the $100,000,000 to be available from the temporary rate increase fund. He also explained that the notices to be served by the railroads of a desire to revise existing wage contracts so as to effect a 15 per cent reduction were not to be interpreted as in the nature of a threat but rather as constituting the 30 days' notice provided for in the railway labor act.

Reconstruction Finance Corporation Bills

Active consideration of the Reconstruction Finance Corporation bills has been postponed by Congress until after the holiday recess but a beginning was made in the way of hearings on December 18 when Eugene Meyer, governor of the Federal Reserve Board, testified befor the banking and currency committee of the House and a subcommittee of the similar Senate committee as to the importance of prompt action on the bills. He mentioned the real estate and railroad situations as particular examples of the need for such a corporation and said that its very existence would have a favorable effect.

At a breakfast conference with House leaders on the same day the President had urged the importance of early enactment of this legislation and had been assured that it would be considered immediately after the recess. Thomas W. Lamont, of J. P. Morgan & Co., in testifying before the Senate finance committee, also said that the creation of the corporation was of the greatest importance at this time in view of the plight of the railroads, the basic industry of the country, and that the question of foreign financing is not of anything like the same importance as the domestic situation. Asked if the railroads could wait for aid from the corporation he said "you never can tell how long you can keep the patient going."

A question as to whether loans to railroads should be made through the proposed corporation or by reviving the revolving fund created by Section 210 of the 1920 act and administered by the Interstate Commerce Commission was raised before the Senate committee when hearings were resumed on December 21 with Mr. Willard and Chairman Brainerd of the Interstate Commerce Commission on the stand. It was raised by Senator Couzens, who is no friend of the Treasury department, and who declared that he thought it preferable that an "experienced" body such as the commission should pass on the applications of the roads for loans rather than a board headed by the Secretary of the Treasury as proposed in the bills. Apparently, however, Senator Couzens was laboring under the impression that the $300,000,000 fund of 1920 is still largely intact, whereas although most of it has been covered back into the Treasury it is now lost in the deficit.

Heavy Indebtedness Maturing

Mr. Willard, in expressing the opinion that the finance corporation bill should include specific provision for loans to railroads among the financial institutions to be assisted, said that he understood that the Section 210 fund had worked satisfactorily and when asked by Senator Couzens as to whether it would be satisfactory now said he had assumed that the bill before the committee amounted to about the same thing. He rather startled members of the committee by beginning his testimony with a statement that the railroads have indebtedness maturing in the next three years amounting to about a billion dollars including short-term notes, but he later said that the very existence of the corporation and the possibility that railroads could obtain loans at reasonable interest would have a favorable effect and enable the roads to meet some of their requirements elsewhere. He said the Baltimore & Ohio has $43,000,000 in 4¼ per cent notes coming due next year and that its available resources for meeting them are $30,000,000 of general refunding mortgage bonds in its treasury, which could be issued at 5 or 6 per cent, but that the outstanding similar bonds bearing 5 per cent are now selling at 55 and those bearing 6 per cent at 62, although they have sold as high as 104 and 108 respectively. It would be regrettable, he said, if the company should have to sell bonds at such prices to pay off its notes and it would be very helpful and in the public interest if it should feel that it could get part of the money from the government at a saving of one or two per cent.

Mr. Willard pointed out that such a saving for the roads as a whole might amount to $10,000,000 to $20,000,000 which would otherwise be added to the cost of transportation, and that it would be a profitable investment for the government, attended by a well-nigh negligible hazard, because the roads would want to pay back the money as soon as possible when interest rates are again reduced. He pointed out that the roads had borrowed over $300,000,000 from the revolving fund, most of which had been paid back, and said that he assumed "we are in a relatively temporary emergency condition from which we will emerge later on." Mr. Willard said that the short-term maturities for all the roads for next year amount to about $224,000,000.

When Chairman Walcott of the committee asked if the law under which the $300,000,000 fund was provided would fit the present emergency Mr. Willard said he did not think it would. (Section 210 was limited to the period immediately following the termination of federal control.) In reply to Senator Fletcher he said that the funds to be derived from the rate advance and loaned through the Railroad Credit Corporation are to be used to meet deficiencies in interest charges and will not provide for any maturities and that it had been estimated that some 80 Class I railways will fail to earn their interest charges by $90,000,000 this year.

Senator Brookhart Takes a Hand

Senator Brookhart asked why the Baltimore & Ohio could not use some of its "surplus" to meet its indebtedness. Mr. Willard replied that while its books show a profit and loss surplus of over $100,000,000 that is merely the excess of assets over liabilities and is not available in cash. The Senator also asked repeatedly if it would not be better for the government to loan the money to the farmers or to increase their prices so as to increase their purchasing power. Mr. Willard replied that perhaps Senator Brookhart would be a better judge of that but that the government could expect to get back anything it loaned to the railroads. He said he did not think agriculture was in any worse shape than the railroads at this time.

When the Senator said he had heard the same thing from the railroads every time there was a general rate advance case and that they had been denied a rate advance in 1910 and "nothing happened", Mr. Willard asked: "Are you sure that nothing happened?" and he recalled that it became necessary for the government to take them over during the War. Senator Brookhart asked if the railroads were not still paying $43 a ton

for steel rails, "more than any one else", and if the car and locomotive builders were not still making large profits. Mr. Willard said that nobody else buys many steel rails but that other items of steel have gone down in price and that he had not bought any locomotives for three years. When the Senator said that the only thing that could happen to the roads would be receiverships and that the Rock Island was managed better by the court than by its former management Mr. Willard replied that the effect on the insurance companies and other investors was also to be considered.

When Mr. Willard said that the B. & O. now has capacity to handle 100 per cent more traffic he was asked if some of the traffic lost by the railroads has not been permanently lost. Mr. Willard replied that some probably has but that the population of the country is also increasing every year and that he was not particularly worried by these new agencies of transportation, "although they present a troublesome problem at present, because lots of things have got to move by railroad and I am not afraid there will not be enough for all in the long run."

Testimony of Chairman Brainerd

Chairman Brainerd was asked to discuss the operation of the Section 210 revolving fund and the possibility of substituting it for the plan of the finance corporation bill, but Mr. Brainerd was not connected with the commission at the time the loans were being handled under that section and became involved in some difficulties in attempting to explain it. Senator Couzens suggested leaving the railroads out of the bill and reviving the old fund so that applications should be made to and passed upon by the commission in the form of certificates. Chairman Brainerd said he thought the commission would have to pass upon any notes that the railroads might have to give to the finance corporation any way, if they run beyond two years or exceed 5 per cent of the securities issued by a company. He said that there are loans outstanding under Section 210 amounting to about $27,000,000.

Asked about railroad maturities he said that the funded debt maturing in 1932 amounts to $70,299,000 and the equipment trust obligations to about $210,000,000. Senator Glass said the committee was particularly interested in the amounts coming due in the next three months. Chairman Brainerd had a figure of the funded debt maturing up to May 1, amounting to $13,714,100, but was asked to return the next day with separate figures for the bonds, notes and equipment obligations for the first three months of the year. He also presented an estimate by the Bureau of Statistics that the net railway operating income for 1931 will amount to $535,000,000; as compared with $885,000,000 for last year, and showed that the net for October was 43 per cent less than in October last year. In reply to questions he said that if called upon to issue certifications on railroad applications the commission could act very quickly.

Chairman Brainerd returned on December 22 accompanied by Commissioner Mahaffie and the directors of the bureaus of finance, statistics and accounting, armed with so much information that the committee had difficulty in digesting it, particularly since what its members especially wanted was a single figure showing how much money the railroads would want to borrow from the corporation in the next few months and one Senator thought the only important figure was the amount of railroad obligations now overdue. Dr. M. O. Lorenz explained that the amount the roads would need would depend to some extent on their traffic and also on their ability to renew short-term loans but he gave a maximum estimate of the excess of cash requirements over probable earnings up to May 1 of $156,000,000. Chairman Brainerd said the commission had not tabulated bond maturities by months, but a special report secured through the Bureau of Railway Economics indicates the following totals for 128 Class I roads for the first quarter of 1932; Bonds, $2,677,550; loans and bills payable, $35,984,395, including bank loans; equipment trust obligations, $35,560,820.

For Class I operating railways (excluding lessor companies) the total amount of bond maturities for the year 1932, including the amount given above for the first quarter, is $70,299,513, that is, $67,621,963 for the last three quarters. Loans and bills outstanding on October 31, 1931, amounted to $224,145,827. The amount falling due after March 31, 1932, is not available without special tabulation. The total amount of equipment trust obligations for 1932, including the amount given above for the first quarter, is $110,782,506, that is, $75,221,686 for the last three quarters. The term "bond" in this paragraph includes miscellaneous obligations running for more than two years.

If the commission were authorized to resume the making of loans under section 210, he said, it could promptly certify the loans, upon proper application, for payment by the Secretary of the Treasury. In an emergency less than a week might be required within the commission. Some investigation would be made by the Secretary of the Treasury before payment.

Senator Glass asked if the commission has been disturbed by the thought that there might be more receiverships of railroads if the corporation is not set up soon. "We have been apprehensive," replied Mr. Brainerd, "and we do feel that the railroads will need at least $156,000,000 by May 1 providing the banks do not extend but I think they will extend some of the loans." Dr. Lorenz said that the notes coming due by May 1 amount to about $79,000,000, the equipment obligations to $62,000,000, and the bonds to $14,000,000.

Commissioner Mahaffie explained that if the 1920 legislation is to be re-enacted it would be necessary, substantially speaking, to re-appropriate the funds.

Assurance of prompt action on the bill immediately after the holidays had been given the President by Senate leaders of both parties at a morning conference at the White House on December 21 attended by members of the banking and finance committees at which the President again urged the importance of early action on the bill. A number of prominent bankers who appeared before the committee also stressed the element of promptness, saying that the creation of confidence in the status of railway securities held by financial institutions would go a long way toward starting the country back to prosperity. There is a prospect of some controversy over certain provisions of the bill as to the eligibility of the bonds or debentures of the corporation for rediscount. After Senator Couzens had made his suggestion that the old revolving fund be revived most of the bankers who testified expressed the opinion that the railroads should be included in the finance corporation bill but there was a suggestion that a provision might be inserted requiring certifications by the commission. All, however, agreed that time is of the essence.

The President announced on December 22 that he had been assured that there is sufficient cohesion of views in Congress to assure the passage of the bill immediately after the first of the year, and that other economic

measures he had recommended would be expedited. He said he had urged Congress to cut short its holiday recess but that he had been told it would probably be impossible to obtain a quorum.

An effort to obtain immediate consideration of his resolution providing for a general investigation of "all matters affecting the operations" of railroads by a joint committee of Congress was made by Senator Couzens on December 18 after the resolution had been favorably reported by the audit and control committee of the Senate, with an amendment reducing the amount to be expended for the purpose from $10,000 to $1,000. Senator Copeland defeated the proposal to consider the resolution by unanimous consent, saying he had no disposition to assent to a protracted hearing which undoubtedly would go over old material, and suggesting that Senator Couzens prepare a bill which in his judgment would cover the needs of the railroads so far as Congress can relieve the distress, on which the Senate committee could then hold hearings.

Senator Couzens replied that he had "no idea what to present". "The railroads have made no showing", he said. "I could not prepare a bill stating what ought to be done. I want the representatives of the railroads to come and tell us what they think ought to be done, how it ought to be done, and what position they think the government is in to carry out their recommendations". He said there is no desire to repeat the collection of the information brought out at the rate hearings before the Interstate Commerce Commission but that the committee would be a forum where the representatives of the railroads and the commissioners "can come down and tell us all we desire to know". He mentioned as two ways in which the railroads might be relieved financially, the President's proposal for a reconstruction loan agency and the revolving fund method followed after the War, and he said the investigation by a joint committee would prevent the necessity for duplicate hearings before the House and Senate committees. "So far as I know", he said, "the railroads have made no application or request, except through me personally, for any aid. I am not in a position to speak for the railroads as to what they claim their needs to be, but certain representations have been made to me which justified this concurrent resolution, and the resolution provides, not for a final conclusion of the hearings but that reports shall be made from time to time as to what might properly be done to aid the railroads."

Senator Copeland retorted that "what the Senator has said strengthens my impression that this measure would lead to protracted discussions without having any objective in mind except a hazy one to give relief if relief is possible."

The resolution was passed once by the Senate on December 21 but because Senator Copeland was out of the chamber it was later voted to reinstate the resolution on the calendar for reconsideration.

The House committee on interstate and foreign commerce held its first executive session for the session on December 18 but postponed until after the holidays any definite plans for the consideration of the transportation bills pending before it.

THE STEAMER SAN CLEMENTS of the Quaker Line, landing at Albany, N. Y., on December 14, brought from the Pacific coast 100,000 cases of canned goods, 1,000 tons of chemicals, and other merchandise for eastern and middle western states. Carloads of canned goods were discharged for shipment by rail to Chicago, Detroit and other western cities, and for New York state and New England.

Rail Committee Ready for Wage Discussions

RAILWAY executives, at a meeting in New York on December 18, appointed regional committees to meet jointly with the committee of chief executives of the Railway Labor Executives Association and "negotiate to a conclusion the pending issues concerning unemployment and wages." Railway labor leaders, as reported in the *Railway Age* of December 19, had already expressed a willingness to negotiate with managements on the suggestion that the employees accept a 10 per cent reduction in their wages for one year; these labor leaders are now canvassing their constituents for the necessary power.

The action of the railway executives amounts to a reappointment with increased power of the committee, headed by Daniel Willard, president of the Baltimore & Ohio, which represented the managements in earlier conferences with labor executives. Its members are: Eastern—Mr. Willard; J. J. Pelley, New York, New Haven & Hartford; C. E. Denney, Erie; Western—L. A. Downs, Illinois Central; J. E. Gorman, Chicago, Rock Island & Pacific; L. W. Baldwin, Missouri Pacific; Southern—C. A. Wickersham, Atlanta & West Point; H. D. Pollard, Central of Georgia; A. C. Needles, Norfolk & Western.

Also at the New York meeting, the executives decided to serve notice on the several railway labor organizations, as provided in the Railway Labor Act, of a desire to revise existing contracts so as to effect a 15 per cent reduction in wages of all classes of employees. This announcement, however, was followed, in the formal statement issued, by an expression of hope "that the conference arranged will lead to an amicable and early agreement, in which case the notice of a desire to revise contracts will be automatically cancelled." On December 21 the notices were sent to the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors, the Brotherhood of Railroad Trainmen and the Switchmen's Union of North America. On the following day similar notices were served on the train dispatchers organization and on December 23, the telegraphers were given formal notices of the railways' proposal.

Similar notices are to be served from day to day upon the other organizations the last to go out on January 2. The letter transmitting these notices suggests that the union representatives defer, until after the joint meetings on the voluntary wage reduction proposal, the initial conferences which the Railway Labor Act requires shall be held within 30 days.

The eastern roads were the first to act on the labor organizations' suggestion that negotiating committees be appointed. The suggestion was embodied in a resolution passed on December 11, the final day of the Chicago meeting of 1,500 representatives of organized railway labor. On December 14 the Eastern President's Conference met in New York and reappointed its three members of the Willard committee with the necessary increases in power. Shortly afterwards it was announced that the Southern roads had taken similar action while the acquiescence of the western lines followed at the general meeting of all executives on December 18.

The calling of the meeting between the committee of railway presidents and the committee of railroad labor executives to act upon the railways' proposal that the employees accept voluntarily a 10 per cent reduction in wages now awaits on the ratification by the employees of the action taken by the general chairmen and other officers of their organizations in the recent meeting in Chicago. Reports indicate that while the returns from some of the employees will be in by December 28, others are not scheduled to be received until January 14. During the labor meeting in Chicago it was indicated by some of the executives that a vote of the employees could be completed within two weeks or by December 28 but apparently this is not to be done in all cases.

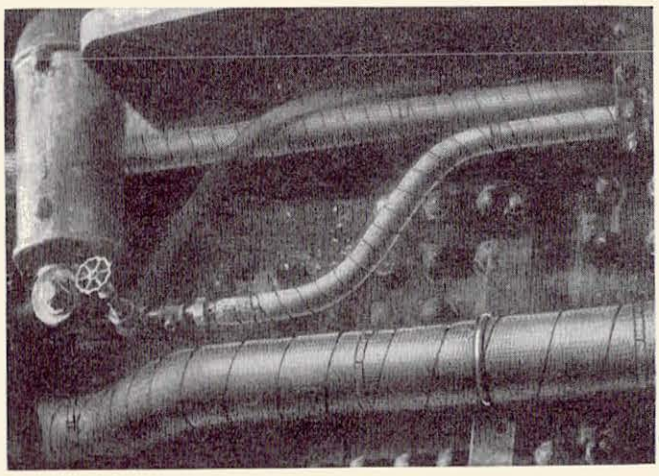
Insutape Waterproofed

THE pipe-insulating material, known as Insutape and furnished to the railroads for a number of years by the Union Asbestos & Rubber Company, 310 South Michigan avenue, Chicago, has recently been improved to make it weather proof. By means of a new treatment, improved insulating value is said to be obtained, accompanied by increased flexibility and durability, as well as complete weather-proofing without the use of paint or metal-jacket applications.

The application of the waterproofing compound to Insutape is such that the soft, pliable covering becomes an integral part of the tape over its entire outer surface, and more than half way down the side. Thus, when the edges contact as the tape is spiralled about the pipe to be insulated, all of the exposed surface is protected by the waterproofing.

This method is said to be greatly superior to the old method of painting the tape to make it weather-proof, which often resulted in uneven application, exposed surfaces at joints, and paint soaking into the insulation, which mats it down and destroys its air-cell structure, also causing the insulation to stiffen and be unsatisfactory for re-application.

This insulating material is being used for wrapping the steam pipes of cars and locomotives, as well as in power plants and for other purposes. The woven one-piece asbestos jacket, when spiralled around the pipe, gives the effect of a diagonal weave which will not buckle or distort. The Insutape fits the pipe closely and, with its waterproof covering, presents an attractive appearance. It is applicable to either curved or straight pipe and is available in four sizes, from $1\frac{9}{16}$ in. wide by $\frac{3}{16}$ in. thick to 4 in. wide by 1 in. thick.



Application of Super-Insutape on Live Steam Pipe to Locomotive Booster

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended December 12 amounted to 613,534 cars, a decrease of 130,819 cars as compared with the corresponding week of last year and of 309,327 cars as compared with 1929. Loading of coal and coke showed a slight increase as compared with the preceding week. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, December 12, 1931

Districts	1931	1930	1929
Eastern	140,834	162,961	200,711
Allegheny	117,380	144,660	187,351
Pocahontas	37,619	44,089	60,911
Southern	91,862	117,641	143,415
Northwestern	71,674	88,824	107,863
Central Western	99,312	121,079	142,041
Southwestern	54,853	65,099	80,569
Total Western Districts	225,839	275,002	330,473
Total All Roads	613,534	744,353	922,861
Commodities			
Grain and Grain Products	30,179	39,532	43,995
Live Stock	24,691	25,573	28,888
Coal	130,982	149,073	209,641
Coke	6,657	8,541	11,919
Forest Products	19,084	34,062	52,404
Ore	4,004	6,393	8,868
Merchandise L. C. L.	197,558	219,005	245,043
Miscellaneous	200,379	262,174	322,103
December 12	613,534	744,353	922,861
December 5	636,366	787,072	933,309
November 28	558,807	701,050	836,310
November 21	653,503	779,752	949,716
November 14	690,366	829,023	982,926
Cumulative total	36,249,049	44,627,817	51,345,761

The freight car surplus for the first week in December averaged 664,769 cars, an increase of 5,423 cars in a week. The total included 351,322 box cars, 242,893 coal cars, 29,485 stock cars and 13,741 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended December 12 amounted to 45,377 cars which was 4,067 cars less than for the previous week and 4,898 cars less than for the same week last year. Coke and coal were the only commodities to show increases over 1930 loadings. Grain was lighter by 1,104 cars, live stock by 490 cars, pulp and paper by 495 cars, lumber by 238 cars, miscellaneous freight by 883 cars and merchandise by 1,663 cars.

The index number of total car loadings was 73.03 as against 73.98 for the previous week. Merchandise loading showed a decrease from the previous week of 304 cars which was less than the normal seasonal decline and consequently the index number rose from 86.76 to 87.82.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
December 12, 1931	45,377	21,954
December 5, 1931	49,444	21,471
November 28, 1931	52,308	20,224
December 13, 1930	50,275	29,613
Cumulative Totals for Canada		
December 12, 1931	2,496,626	1,251,562
December 13, 1930	3,064,409	1,648,373
December 14, 1929	3,428,260	2,031,869

Motor Transport Section

Trucks Replace Trap Cars on the Milwaukee

L.c.l. freight service is speeded up by 24 hrs. at several points—Operating economies also secured

THE trap car, as a means of handling l.c.l. freight between freight houses or between industries and freight houses within the same switching district, has given way to the motor truck, tractor and trailer in a number of the principal middle western cities served by the Chicago, Milwaukee, St. Paul & Pacific. The adoption of highway vehicles for this intra-city service was brought about primarily by the desire to expedite the delivery of l.c.l. freight traffic, and to place the road on a more favorable basis of competition with independent trucking concerns and with other carriers. This purpose has been accomplished in every case, as much as 24 hrs. of time in transit being saved in nearly all instances. The company has found that transferring l.c.l. freight by motor truck is also, in some instances, more economical than handling it by switching movements and trap cars.

Motor trucks, tractors and trailers are being used particularly in cities where the Milwaukee has more than one receiving and delivery platform, and also where it maintains regular forces at suburban stations. For example, at Milwaukee, Wis., there is a main freight house at Second and Fowler streets, and outlying stations where regular station forces are employed at West Allis, North Milwaukee, North Avenue, Stowell and Gibson. Formerly there was a daily movement of trap cars in each direction between the main freight house and the suburban stations. Outbound freight received at the suburban stations was loaded in trap cars which were moved to the station at Second and Fowler streets by switch engine. The main station, in turn, made up daily trap cars for each of the suburban stations. In this operation about 400 trap-car days were required each month to carry on the service. All outbound freight handled in trap cars was 24 hrs. longer in transit than was the freight received directly at the main freight house, and the same delay applied to inbound freight moving by trap car to the suburban stations for delivery. Outbound freight received at the suburban stations during the day did not reach the main freight house until the following day, and was not ready for movement on an outbound road train until the evening of the day after it was received at the suburban stations. Similarly, inbound freight received

Semi-Trailers Operated by the Contractor at Milwaukee, Wis.

at the main freight stations in the morning was not switched by trap car to the suburban stations before evening and it was not ready for delivery until the following morning.

Suburban Stations Get Improved Service

Under the scheme of motorized operation, freight received at and delivered from the suburban stations reaches its destination just as soon as freight received at the main freight station at Fowler street. A fleet of tractors and semi-trailers is employed with good effect. In addition to replacing trap cars with the tractors and trailers, the company arranged to open the main freight house at 4 a.m. to provide for early unloading of suburban business and its transfer to motor trucks or trailers for the movement to the various substations. The trucks now leave the main freight station between 7 a.m. and 9 a.m., and the freight is ready for delivery at the suburban stations only a short time thereafter. In the case of outbound business, trucks leave the suburban stations at 4:30 p.m. and arrive at the main freight house in time to get their loads transferred immediately to outbound trains. There is, of course, a steady movement between the suburban freight stations and the main station during the day, the trailers not being held until closing time but being moved when loaded. All freight originating at the suburban stations, with the exception of several set out cars loaded direct to break-bulk stations beyond Milwaukee, is now moved to the Fowler Street station by tractor and trailer.

It is in service of this sort, where the carrying unit must remain in place for some time for loading and unloading, that the Milwaukee has found the tractor and semi-trailer particularly advantageous. In Milwaukee, as in the other cities where it is using motor trucks, tractors and trailers, the railway has a contract with a trucking company to provide for the motor service, the railroad operating no equipment of its own for this purpose. In Milwaukee the contractor is the Barry Transfer & Storage Co., which supplied a fleet of eight Fruehauf automatic semi-trailers of six-tons capacity for this railway service. Inside, these trailers are 16 ft. long, 7 ft. wide and 6 ft. 6 in. high, and the sides are built up solid from the floor to a height of 30 in. and then slatted. An extension on the front brings the supports forward and permits loading from the front end. The rear doors are of the split-type and when open are paralleled with the sides of the body. The Milwaukee pays this contractor, as it does the others, a flat rate per 100 lb. of freight handled, and there is no minimum charge.

Perishables Trucked at Twin Cities

A similar system of tractor and trailer operation is in effect at the Milwaukee's Twin Cities terminals, a considerable volume of l.c.l. tonnage being moved by highway equipment between St. Paul, Minn., Minneapolis, Twin City Transfer, Charles street and Hennepin avenue. Formerly perishable freight offered for shipment at St. Paul and Minneapolis was loaded into refrigerator cars at each point, and two sets of outbound cars were made up from these stations. At the present time all such freight is consolidated at Minneapolis, deliveries from St. Paul being made by tractor and trailer, and all perishable tonnage is now made up in one schedule of outbound cars. This results in a saving of 10 refrigerator cars a day and also a saving of incidental expenses, such as cleaning and icing. At the same time better service is rendered to shippers in St. Paul because of the more complete and frequent service scheduled out of Minneapolis. From one to three large semi-trailers are employed in this service, the number varying with the volume of traffic. These are moved back and forth throughout the day as their loading is completed.

At Davenport, Iowa, Rock Island, Ill., Moline and East Moline, the Milwaukee formerly shuttled trap cars back and forth every day between all the stations. For example, Moline freight was moved to the Davenport station by trap car for outbound loading, the Davenport station being the outbound loading point in this vicinity. Similarly, inbound freight received at Davenport was moved to Moline, East Moline and Rock Island by trap car for delivery. Two motor trucks now perform all the service formerly rendered by the trap cars. One truck leaves the Davenport station at 7:30 a.m. for Moline and East Moline and the other leaves at 8 a.m. for Rock Island, carrying l.c.l. freight which is to be delivered from the Moline, East Moline and Rock Island stations. In the reverse direction these trucks leave East Moline, Moline and Rock Island at 4:30 p.m. with l.c.l. freight for loading into outbound cars at Davenport. As a result l.c.l. freight is handled to and out of Moline, East Moline and Rock Island on the same day it is received, instead of being delayed 24 hrs. in the terminal. It is estimated that the use of the two trucks at this point results in a saving of 400 car-days a month, and it is estimated also that the expense of the truck service for which the railway contracts is a little less than the expense involved in handling the freight by trap car.

Motor Truck Takes Short Cut

At Rockford, Ill., by the use of motor truck service between Rockford and East Rockford, the railway is able to offer inbound freight for delivery at East Rockford at 7:15 a.m. instead of at 11 a.m., which was the delivery time when the transfer between Rockford and East Rockford was accomplished by a trap-car movement. Formerly a daily trap car was loaded at Rockford for East Rockford, and although it was switched out early in the morning, it did not reach East Rockford until 10 or 11 a.m. Now a motor truck leaves Rockford at 7 a.m. and is at the East Rockford station in 15 min. It is interesting to note that the distance from the Rockford Station to the East Rockford station by highway is only 1½ miles, compared to 6 miles over the round-about railway line. In addition to saving several hours in the time required for delivery of inbound shipments to East Rockford, there is a saving of 24 hrs. in the time required to handle outbound shipments from East Rockford. Previously, those received at East Rockford in the afternoon were not handled out of Rockford in outbound trains until the following evening.

At Madison, Wis., the Milwaukee has an east side station and a west side station. Formerly a switch engine moved three or four cars daily between the two stations. At the present time freight received at the East Madison station is moved by motor truck to the West Madison station, saving the expense of switching to and from East Madison. Indicating the speed of the truck service, the truck leaves East Madison at 5 p.m. and is unloaded at West Madison by 5:30 p.m. Regardless of the station at which it is received, outbound freight from Madison is now sent on its way the same day it is received, putting the railway on a parity with competitive truck lines.

At Kansas City, Mo., the Milwaukee has two stations, one at Baltimore avenue and another, the larger, at Liberty street. Trucks have replaced the trap cars which formerly moved between these two stations, and have speeded up the delivery of l.c.l. freight to and from the Baltimore avenue station by 24 hrs.

In Chicago, the railway is moving a considerable volume of merchandise by motor truck from Cortland street, Healy and Western avenue directly to the Union Street freight house. Outbound freight received at these stations before noon is sent forward to the Union Street house by trap car, but after noon, all freight received at the outlying stations is trucked to Union street, the last loads leaving Cortland street, Healy and Western avenue at 5 p.m. This results in a saving of 24 hrs. in the time required for delivery of freight received after noon at the outlying stations. Merchandise is also trucked between the Milwaukee's stations and those of several connecting lines, instead of being moved by trap cars, speeding up the service, avoiding unnecessary use of freight cars and eliminating some expensive switching movements. Like other Chicago roads, the Milwaukee also participates in the tariff providing for trucking in lieu of trap cars for the transfer of freight to and from the platforms of shippers and consignees entitled to trap-car service.

Trucks are also being used in place of trap cars to facilitate delivery to connecting lines at Green Bay, Wis., St. Paul, Minn., Davenport, Iowa, and Kansas City, Mo., savings of as much as 24 hrs. in time required for delivery being common.

Light Weight a Feature of Gramm Trailers

GRAMM Motors, Inc., Delphos, Ohio, is introducing a series of semi-trailers which combine adequate strength and capacity with light weight. The four models have nominal capacities ranging from 3 tons to 18 tons, with gross ratings of from 12,000 to 38,000 lb. The chassis weight of the 3-4¾-ton model is 1700 lb., and the maximum body and payload weight is 12,000 lb. The chassis weights of the 5-7¼-ton model, the 7½-12-ton model and the 10-18-ton model are 3200 lb., 4200 lb., and 4500 lb., respectively, and the maximum body and payload weights are 18,000 lb., 27,000 lb., and 38,000 lb., respectively.

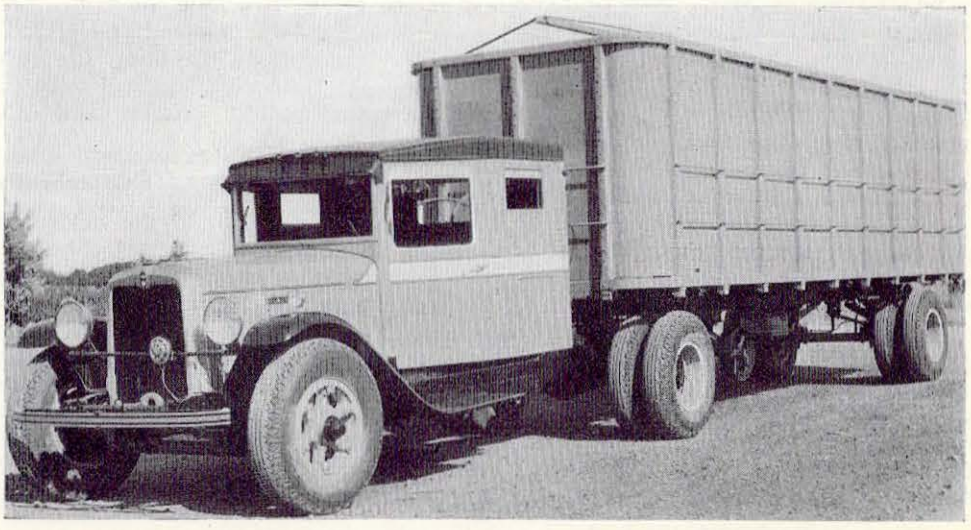
One of the interesting features of the Gramm semi-trailers is the frame construction. The double-channel frame puts the maximum strength at the center of the frame, the point of maximum bending moment, and maintains as light a frame construction as possible at each end. The steel platform base is so designed that bodies can be built with rounded corners in the front, the standard Gramm bodies for these trailers having such corners.

The trailers are fitted with a Martin semi-automatic type upper fifth wheel, 24 in. to 30 in. in diameter, with a steel bolster holding the hardened alloy-steel king pin. The upper fifth wheel can be attached to either Fruehauf, Highway or GMC lower fifth wheels. The upper fifth wheel is riveted to a large channel reinforced by a heavy steel plate, which tends to strengthen the frame at this point and to maintain alinement.

A specially designed Timken axle is used, this being crowned in the center so as to allow each tire to carry its proportion of the load. A booster brake is used in connection with the hydraulic brakes, this booster being designed with a special relay valve, which makes it possible to operate the tractor and trailer brakes simultaneously to avoid jack-knifing. The springs are of chrome vanadium steel, and helper springs are standard equipment. The front support is adjustable for height, and reinforced with two truss rods to provide maximum strength with minimum weight. The supports are hand operated. Due to the special design of the frame, the height from the ground to the bottom of the body is said to be approximately six inches less than that of the average trailer.

All four of the models are offered with Duralumin frames, through an arrangement with the Aluminum Company of America. The saving in weight varies in the different models, but the average is from 1,000 to 1,500 lb.

THE ATCHISON, TOPEKA & SANTA FE AND THE COLORADO & SOUTHERN have consolidated two southbound and two northbound trains between Denver, Colo., and Pueblo in an effort to reduce operating expenses. The Santa Fe owns and operates the line between Denver and Pueblo, the Colorado & Southern being the tenant.



New Gramm Semi-Trailer Coupled to Gramm Tractor

North Western Coach at the Loop Bus Station in Chicago

North Western Buses Supplement Train Service

Interstate Transit Lines, a subsidiary, is covering 2300 miles of routes in C. & N. W. territory

AGGRESSIVE expansion has marked the activities of the Chicago & North Western in motor coach operation. During the past two and one-half years it has developed a system of highway routes, generally supplementary to its principal railway lines, which now provides service on approximately 2,300 miles of highways in Illinois, Wisconsin, Iowa, Minnesota, South Dakota and Nebraska. Current schedules indicate that its buses are operating approximately 12,000 bus-miles daily in North Western territory.

Bus Operation Begun in 1929

The North Western first became financially interested in motor coach operation on July 1, 1929, when it acquired one-third of the capital stock of the Interstate Transit Lines, a previously independent system of motor coach lines operating around Omaha, Neb. In the purchase of this company, the North Western joined with the Union Pacific, the latter taking the remainder of the stock. The decision of the North Western to engage in motor coach operation was based upon several considerations. First was the change in competitive motor coach lines from short-haul to long-haul carriers, and the consequent attraction of trans-continental traffic from the railway to the highway. Other reasons were the likelihood that motor coach operation would continue and would further expand, and the desirability that the railway do something to minimize the effects of the resultant loss of traffic. To provide for simplicity of control, the North Western and the Union Pacific decided to operate the Interstate Transit Lines as a single unit in the territories of the two railways, operations of the highway subsidiary in Union Pacific territory having been described in the August 22 issue of *Railway Age*. In September, 1930, to identify the motor coach service more closely with the railways controlling it, the name "Chicago & North Western Stages" was adopted and placed on the motor coaches and stations operating in North Western territory, and the name "Union Pacific Stages" similarly identified the motor coaches and other facilities in Union Pacific territory.

Comprehensive System Developed

Around the nucleus furnished through the acquisition of the old Interstate Transit Lines, has been built a comprehensive system of highway routes in North Western territory. The program of expansion first called for the establishment of a line between Chicago and Omaha, Neb., paralleling the main line of the North Western. A certificate was granted by the Board of Railroad Commissioners of Iowa covering that part of the line in the State of Iowa, but it contained restrictions prohibiting the transportation of local passengers between a number of points. There was no

restriction, of course, on the handling of interstate passengers. In May, 1930, Interstate Transit Lines acquired the Sioux Falls Traction System bus lines which had a network of routes between Sioux City, Iowa, and Sioux Falls, S. D. Shortly afterward through service between St. Paul, Minn., Minneapolis and Omaha was inaugurated. Early this year a system of local motor coach lines in the vicinity of Des Moines, Iowa, was acquired through the purchase of the Ft. Dodge, Des Moines & Southern Transportation Co. The 550 miles of lines acquired intersect the main line between Chicago and Omaha at several points, and provide feeders to the main line. Thirty-six motor coaches were involved in this purchase. A few months later an interstate motor coach route was established between Chicago, Milwaukee, Wis., and the Twin Cities, bringing the route mileage covered by Chicago & North Western Stages up to its present total of approximately 2,300.

Current Schedules

At the present time Chicago & North Western Stages provide two round trips daily between Chicago and Omaha, a distance of 507 miles, on a schedule of approximately 20 hrs. On account of lack of state permits for intrastate operation, no passengers are carried locally in Illinois, nor are any carried locally between Clinton, Iowa, and Wheatland and points intermediate nor between DeWitt and Cedar Rapids and points intermediate. This line parallels closely the North Western railway line between Chicago and Omaha. On the 400-mile route between Omaha and the Twin Cities, there are also two daily round trips. This embraces alternate routes for the distance between Omaha and Storm Lake, Iowa, one line running via Sioux City and the other via Denison. The running time varies from 14½ hrs. to 15½ hrs. northbound and from 14 hrs. to 16½ hrs. southbound. Between Chicago and the Twin Cities, 457 miles, there are likewise two schedules in each direction daily. This line in general parallels the main line of the North Western between Chicago and St. Paul. The running time on both northbound and southbound schedules varies between 17 and 18 hrs. On the Chicago-Omaha, Omaha-Twin Cities, and Chicago-Twin Cities routes, the two schedules made in each direction daily contemplate one morning departure and one evening departure from each terminal. On the Omaha-St. Paul line, no passengers are carried locally between Mankato, Minn., and the Twin Cities, while on the Chicago-Twin Cities line, no passengers are carried locally either in Illinois or Wisconsin. This line handles interstate passengers exclusively.

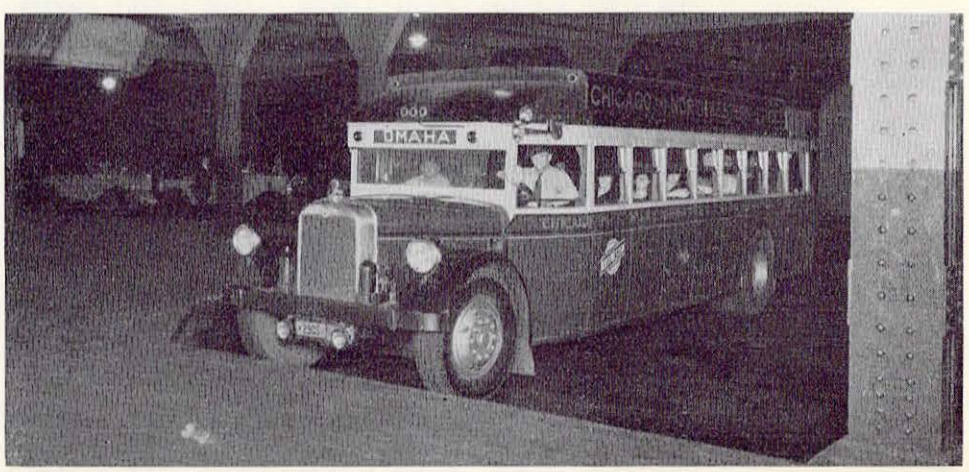
More frequent service is provided on the shorter lines in North Western territory. In addition to the two round trips operated by the through motor coaches between Chicago and the Twin Cities, which run via Milwaukee, there are three additional daily round trips between Chicago and Milwaukee. These handle interstate passengers only. There are three round trips daily between Omaha and Sioux City via Oakland, 111 miles, and three round trips between Omaha and Sioux City via Onawa, 102 miles, in addition to the schedule which runs through to the Twin Cities. Four round trips daily are operated between Sioux City and Sioux Falls over three alternate routes, and two daily round trips are operated between Sioux City and Denison. There is likewise frequent service on the local lines in Iowa. Eight daily round trips are operated between Des Moines and Ames, 32 miles; four daily round trips between Waterloo, Marshalltown and Ames, 104 miles; three daily round trips between Des Moines and Boone, Iowa; and one between Des Moines and Ft. Dodge, via Boone, 97 miles; five round trips daily between Des Moines and Indianola, 19 miles; three daily round trips between Des Moines and Ottumwa, 62 miles; three daily round trips between Ft. Dodge and Des Moines, via Webster City, 99 miles; and one daily round trip between Ft. Dodge and Algoma, 44 miles.

Interstate Transit Lines, including Chicago & North Western Stages, has its own complete operating organization. While officers of the North Western and the Union Pacific determine the policies of the company, actual operations are in charge of R. J. Walsh, president of Interstate Transit Lines. The motor coaches utilize bus stations at most points, although in some instances railway stations have been made regular stopping points. In Chicago, for example, a part of the North Western terminal has been remodeled to provide a loading platform, waiting room and ticket offices for bus passengers. The company has been progressive in providing adequate station facilities, new terminals having been constructed at Sioux City and Des Moines, the former at an estimated cost of $125,000.

Contracts for Train Replacement Service

In addition to the bus lines operated by its subsidiary, the North Western has contracts with several independent bus lines for service in replacement of passenger trains. For example, between Chatfield, Minn., and Eyota, a distance of 13.2 miles, the railway contracts with an independent bus operator for the transportation of passengers, baggage, mail and express. The contractor furnishes and operates motor vehicles between the railway stations at these points, the railway issuing tickets good for transportation on the buses,

(Continued on page 992)



The North Western Terminal at Chicago Has Been Remodeled to Accommodate Bus Passengers

Operating Statistics of Large Steam Railways—Selected Items for the Month of October, 1931,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross. Excluding locomotives and tenders	Ton-miles (thousands): Net. Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany 1931	402	144,988	152,671	13,358	4,044	66.6	210,389	71,400	75	58	43.8	21
1930	407	158,607	168,538	15,978	4,434	63.9	239,206	83,537	87	44	33.6	28
Boston & Maine 1931	2,066	320,002	366,452	36,105	10,902	67.8	572,321	211,892	168	119	41.4	26
1930	2,066	378,535	434,158	59,594	13,141	68.1	706,230	270,539	258	41	13.7	71
N. Y., New H. & Hart. 1931	2,042	423,844	500,484	25,450	14,005	63.8	769,866	290,176	241	103	30.1	13
1930	2,093	432,194	509,372	31,527	15,231	63.1	861,299	336,089	272	76	21.7	47
Great Lakes Region:												
Delaware & Hudson 1931	852	272,762	357,400	40,448	8,691	59.6	555,205	251,987	244	27	10.0	118
1930	875	331,135	439,784	46,370	10,860	63.0	683,446	326,320	235	35	13.0	89
Del., Lack. & Western 1931	998	421,720	467,264	53,580	13,827	65.6	795,698	318,701	212	57	21.3	29
1930	998	485,619	535,009	64,088	16,786	65.8	975,894	402,922	230	54	19.0	29
Erie (inc. Chi. & Erie) 1931	2,316	779,243	817,530	72,859	34,291	60.5	2,143,080	810,052	377	112	23.0	95
1930	2,316	888,186	942,752	74,260	40,094	61.9	2,461,762	979,088	405	83	17.1	75
Grand Trunk Western 1931	1,021	206,956	208,311	1,162	4,939	60.7	291,580	101,162	110	41	26.8	36
1930	1,020	239,713	243,694	4,258	6,841	64.4	387,615	142,543	119	32	21.0	41
Lehigh Valley 1931	1,343	454,174	481,166	42,172	14,028	63.3	877,264	376,082	215	150	41.0	28
1930	1,343	492,654	532,455	58,778	16,005	64.3	991,239	432,579	251	92	26.8	36
Michigan Central 1931	1,869	391,839	392,284	9,452	11,729	60.0	687,771	233,165	148	71	32.4	54
1930	1,865	451,074	453,328	13,393	14,931	59.6	876,791	314,001	157	58	27.0	39
New York Central 1931	6,477	1,678,323	1,820,085	103,316	63,345	60.5	3,930,560	1,579,060	820	542	39.8	214
1930	6,468	1,889,727	2,075,693	147,089	73,860	61.3	4,570,070	1,891,684	1,022	311	23.4	368
New York, Chi. & St. L. 1931	1,660	480,182	485,816	2,175	15,227	61.2	885,217	311,072	172	69	28.8	57
1930	1,660	588,335	595,834	8,726	18,906	61.5	1,097,373	395,945	203	55	21.2	43
Pere Marquette 1931	2,200	317,895	333,714	3,208	8,020	62.2	489,052	193,973	146	30	16.8	38
1930	2,201	412,683	420,114	4,157	10,340	60.8	637,280	248,094	171	24	12.3	33
Pitts. & Lake Erie 1931	235	77,577	78,578	1,043	2,963	55.7	248,144	135,338	57	24	29.5	32
1930	232	104,648	107,627	1,127	4,000	60.6	321,463	182,467	60	12	16.3	29
Wabash 1931	2,497	598,728	630,065	11,115	18,665	63.1	1,079,482	369,376	260	154	37.1	65
1930	2,497	754,145	797,714	11,302	22,971	63.3	1,347,256	488,692	315	80	20.3	43
Central Eastern Region:												
Baltimore & Ohio 1931	5,536	1,382,761	1,582,760	174,143	42,915	59.7	2,870,972	1,244,033	867	317	26.8	241
1930	5,541	1,663,959	1,950,325	245,128	54,674	60.1	3,697,399	1,638,193	951	235	19.8	160
Big Four Lines 1931	2,792	634,075	654,651	16,685	19,286	60.6	1,241,319	560,086	268	164	37.9	52
1930	2,712	717,637	749,010	25,722	23,521	61.0	1,537,450	706,591	292	165	36.1	32
Central of New Jersey 1931	692	187,665	207,033	34,794	5,871	55.5	411,605	185,161	123	54	30.7	40
1930	692	240,449	265,467	44,777	7,733	56.5	539,225	251,705	150	37	19.9	18
Chicago & Eastern Ill. 1931	939	178,031	178,206	2,689	4,298	63.7	266,548	113,993	89	73	45.0	40
1930	946	207,279	207,889	2,945	5,646	65.0	346,266	152,106	92	59	39.0	31
Elgin, Joliet & Eastern 1931	447	82,869	85,559	2,599	1,949	57.8	154,627	75,566	84	7	7.9	27
1930	453	118,703	124,026	6,004	3,208	60.1	250,110	128,073	75	18	19.6	13
Long Island 1931	400	49,987	51,684	17,301	582	52.2	43,019	15,888	44	5	10.2	3
1930	400	52,816	57,557	13,685	789	54.6	55,739	21,600	41	8	17.1	...
Pennsylvania System 1931	10,628	3,138,523	3,524,477	357,725	112,101	62.2	7,374,937	3,208,391	2,268	266	10.5	942
1930	10,675	3,761,145	4,238,746	448,157	139,157	62.6	9,234,676	4,097,883	2,339	308	11.6	728
Reading 1931	1,450	521,487	565,468	57,443	14,719	57.9	1,087,434	513,983	325	86	20.9	79
1930	1,448	609,075	662,963	56,487	16,815	58.6	1,234,848	587,972	318	65	17.0	39
Pocahontas Region:												
Chesapeake & Ohio 1931	3,196	1,013,019	1,065,901	36,533	39,629	53.9	3,515,581	1,892,305	625	67	9.7	252
1930	3,113	1,213,692	1,289,843	54,282	46,086	54.7	3,924,394	2,110,653	562	119	17.5	107
Norfolk & Western 1931	2,272	694,297	753,473	32,313	26,043	57.6	2,204,843	1,153,590	454	36	7.3	153
1930	2,230	783,537	857,602	42,933	29,454	57.3	2,493,943	1,299,526	456	42	8.5	134
Southern Region:												
Atlantic Coast Line 1931	5,144	519,248	521,167	7,864	11,158	64.1	593,923	215,291	385	91	19.2	119
1930	5,159	630,937	633,593	8,987	14,914	61.3	835,608	306,629	394	60	13.3	111
Central of Georgia 1931	1,900	215,850	216,908	3,961	5,177	67.9	274,866	102,516	99	48	32.5	3
1930	1,900	242,265	243,624	4,494	6,197	67.9	337,785	133,970	119	29	19.4	9
Ill. Cent. (inc. Y. & M. V.) 1931	6,670	1,497,644	1,513,900	26,532	37,088	59.3	2,502,925	981,984	769	153	16.6	62
1930	6,695	1,723,170	1,744,037	30,565	46,829	59.4	3,136,118	1,251,803	754	163	17.8	59
Louisville & Nashville 1931	5,263	1,104,315	1,180,019	32,887	24,450	57.8	1,270,565	807,626	508	191	27.3	138
1930	5,251	1,432,120	1,516,528	43,260	31,611	58.6	2,225,682	1,065,271	575	130	18.5	122
Seaboard Air Line 1931	4,466	452,044	458,671	5,768	10,871	66.1	597,084	219,556	254	39	13.3	59
1930	4,479	544,782	559,006	5,887	13,271	62.8	772,544	290,811	277	26	8.6	31
Southern 1931	6,675	1,195,530	1,210,424	19,706	28,812	65.6	1,562,074	589,100	782	179	18.6	229
1930	6,676	1,363,649	1,389,119	24,071	33,139	64.6	1,859,919	725,259	815	168	17.1	217
Northwestern Region:												
Chi. & North Western 1931	8,459	1,178,612	1,239,819	26,276	29,287	59.4	1,801,645	644,971	666	138	17.2	160
1930	8,459	1,416,972	1,496,009	26,490	36,037	59.8	2,304,118	883,874	755	111	12.9	116
Chi. Gt. Western 1931	1,459	263,572	263,948	27,321	8,899	60.9	530,661	195,444	76	40	34.5	6
1930	1,459	301,931	325,449	28,404	9,937	61.4	593,686	216,982	95	15	13.3	3
Chi., Milw., St. P. & Pac. 1931	11,249	1,399,647	1,486,911	69,395	38,116	60.8	2,351,309	918,820	757	154	16.9	321
1930	11,314	1,641,718	1,751,368	93,203	47,659	60.6	2,967,060	1,188,824	804	143	15.1	245
Chi., St. P., Minn. & Om. 1931	1,714	240,044	262,403	12,169	5,226	63.5	308,681	121,567	152	23	13.3	70
1930	1,714	306,911	333,538	15,525	6,759	61.7	400,604	159,023	149	28	15.7	36
Great Northern 1931	8,319	836,774	847,672	29,599	29,568	59.5	1,914,518	739,038	477	151	24.1	102
1930	8,338	1,075,249	1,094,146	45,478	41,508	61.1	2,706,017	1,131,351	495	142	22.2	67
Minn., St. P. & S. St. M. 1931	4,323	369,460	376,248	4,692	8,809	65.0	488,783	196,632	145	61	29.7	22
1930	4,351	441,493	454,645	5,927	12,755	66.3	719,817	317,603	167	53	24.0	19
Northern Pacific 1931	6,458	651,767	687,327	39,301	20,071	68.7	1,124,675	454,796	401	120	23.1	67
1930	6,474	799,863	854,174	57,939	26,739	66.9	1,558,587	649,906	402	111	21.6	30
Oreg.-Wash. R. R. & Nav. 1931	2,220	177,209	184,276	11,352	4,593	68.1	269,494	111,297	118	16	11.8	48
1930	2,218	214,495	227,244	15,823	6,149	66.9	372,716	157,953	124	22	15.1	32
Central Western Region:												
Alton 1931	1,000	225,270	238,756	1,871	5,251	61.0	326,772	125,525	105	27	20.3	19
1930	1,000	297,090	321,665	2,282	7,221	61.0	457,132	172,166	119	28	19.0	18
Atch., Top. & S. Fe (incl. P. & S. F.) 1931	11,546	1,689,339	1,838,801	92,501	53,122	62.2	3,276,506	1,073,667	746	203	21.4	219
1930	11,263	2,133,268	2,373,234	156,618	73,601	62.6	4,534,127	1,453,665	804	165	17.0	152
Chi., Burl. & Quincy 1931	9,257	1,243,466	1,286,742	42,723	36,674	59.1	2,196,036	930,469	568	121	17.6	47
1930	9,275	1,453,743	1,512,972	61,971	46,423	59.2	2,830,873	1,234,029	629	141	18.3	25
Chi., Rock I. & Pacific 1931	7,621	1,072,339	1,100,753	8,379	26,452	62.0	1,604,917	627,263	474	144	23.2	111
1930	7,593	1,232,065	1,276,432	10,039	32,630	62.3	1,963,512	778,774	528	147	21.7	128
Denver & R. G. Wn. 1931	2,557	349,314	383,215	41,141	9,500	59.5	573,635	202,616	227	17	7.0	39
1930	2,524	452,643	507,555	60,773	12,038	61.8	726,587	264,728	240	7	3.0	23
Los Angeles & Salt Lake 1931	1,241	176,216	190,569	17,513	5,388	67.9	291,896	105,771	100	14	12.2	30
1930	1,220	191,535	209,167	21,926	5,809	64.7	341,413	127,067	115	3	2.6	35
Oregon Short Line 1931	2,530	319,332	331,688	20,488	9,340	59.7	592,239	216,169	173	6	3.3	57
1930	2,539	410,993	433,764	34,397	12,652	62.2	801,123	309,395	172	7	4.1	30
So. Pacific—Pacific Lines 1931	8,940	1,253,174	1,358,336	160,703	39,975	61.7	2,472,922	801,988	666	278	29.5	199
1930	8,981	1,652,636	1,799,143	269,425	55,983	63.2	3,442,234	1,157,821	766	198	20.5	160
Union Pacific 1931	3,768	1,154,240	1,181,030	49,949	43,528	58.6	2,696,373	829,867	427	32	6.9	142
1930	3,765	1,727,861	1,766,639	77,752	62,270	63.5	3,687,217	1,184,970	445	28	5.9	57
Southwestern Region:												
Gulf, Colo. & S. Fe 1931	1,965	198,952	206,201	4,495	6,135	66.4	364,324	151,136	100	26	20.3	31
1930	1,965	223,895	234,714	4,912	7,838	61.8	482,449	190,585	102	20	16.6	19
Mo.-Kans.-Texas Lines 1931	3,282	356,326	359,107	4,756	10,282	60.1	614,714	227,512	172	53	23.6	83
1930	3,176	384,072	391,153	7,246	12,713	59.7	758,563	293,170	158	77	32.8	55
Missouri Pacific 1931	7,407	1,237,544	1,272,818	34,434	33,664	60.9	2,129,982	824,909	510	86	14.4	172
1930	7,423	1,475,952	1,550,728	45,187	42,850	61.5	2,695,767	1,078,098	548	85	13.3	148
St. Louis-San Francisco 1931	5,175	687,356	692,569	7,781	15,677	59.3	968,738	364,606	398	81	16.9	107
1930	5,169	739,217	748,175	10,474	18,859	60.0	1,156,951	449,696	368	81	18.1	48
St. Louis Southwestern Lines 1931	1,902	196,651	197,161	2,645	4,648	65.7	259,309	96,042	116	28	19.2	42
1930	1,871	209,070	212,383	2,531	5,936	65.0	336,031	127,253	99	30	23.0	18
Texas & New Orleans 1931	4,687	511,101	512,824	1,159	11,835	61.5	723,162	272,758	226	100	30.6	45
1930	4,680	614,955	617,026	2,240	15,319	62.2	929,359	356,536	262	63	19.3	58
Texas & Pacific 1931	1,946	283,587	283,587	1,680	7,747	64.3	461,447	168,596	186	57	23.4	55
1930	1,951	359,950	359,950	2,715	10,347	59.6	646,462	242,031	203	43	17.4	43

Compiled by Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Compared with October, 1930, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany.....1931	3,661	3,360	7,021	15.7	22,158	1,451	492	17.7	328	27.9	5,733	158	40.3
1930	3,107	3,836	6,943	7.1	20,167	1,508	527	18.8	388	32.2	6,619	157	45.4
Boston & Maine.....1931	10,483	8,268	18,751	11.3	22,911	1,788	662	19.4	365	27.6	3,309	107	45.3
1930	10,914	9,670	20,584	7.6	22,803	1,866	715	20.6	424	30.2	4,224	106	53.3
N. Y., New H. & Hart..1931	19,727	14,308	34,035	14.9	25,353	1,816	685	20.7	275	20.8	4,583	104	49.3
1930	18,055	16,027	34,082	12.6	24,372	1,993	778	22.1	318	22.8	5,179	107	50.2
Great Lakes Region:													
Delaware & Hudson.....1931	9,879	3,937	13,816	4.4	25,956	2,035	924	29.0	588	34.1	9,540	118	47.3
1930	8,992	5,542	14,534	4.1	26,033	2,064	985	30.0	724	38.3	12,027	118	58.1
Del., Lack. & Western..1931	17,780	5,330	23,110	8.8	24,838	1,887	756	23.0	445	29.4	10,300	142	62.4
1930	16,923	6,651	23,574	5.9	25,684	2,010	830	24.0	551	34.9	13,022	135	67.9
Erie (inc. Chi. & Erie)..1931	34,961	13,679	48,640	4.4	40,281	2,750	1,040	23.6	537	37.6	11,284	100	58.7
1930	36,879	16,388	53,267	3.9	38,487	2,772	1,102	24.4	593	39.2	13,637	104	67.2
Grand Trunk Western....1931	4,766	7,428	12,194	10.4	23,692	1,409	489	20.5	268	21.5	3,195	99	44.8
1930	4,349	10,234	14,583	8.4	23,815	1,617	595	20.8	315	23.5	4,510	101	52.9
Lehigh Valley 1931	21,805	6,439	28,244	10.5	30,252	1,932	828	26.8	430	25.3	9,035	131	46.3
1930	20,106	8,425	28,531	7.2	27,480	2,012	878	27.0	489	28.1	10,391	142	55.6
Michigan Central 1931	25,583	16,229	41,812	6.8	30,458	1,755	595	19.9	180	15.1	4,024	108	59.2
1930	24,055	14,254	38,309	5.5	32,741	1,944	696	21.0	264	21.1	5,430	109	70.0
New York Central.....1931	77,671	64,802	142,473	13.5	34,073	2,342	941	24.9	358	23.7	7,865	97	45.6
1930	76,858	65,974	142,832	6.8	32,200	2,418	1,001	25.6	427	27.2	9,435	99	53.8
New York, Chi. & St. L..1931	15,951	7,398	23,349	9.8	29,135	1,844	648	20.4	430	34.4	6,044	100	65.3
1930	16,095	9,107	25,202	7.8	27,635	1,865	673	20.9	507	39.4	7,693	100	75.6
Pere Marquette 1931	12,913	4,387	17,300	3.5	23,295	1,538	610	24.2	362	24.0	2,844	91	61.9
1930	10,655	6,460	17,115	3.6	21,987	1,544	601	24.0	468	32.0	3,637	93	70.2
Pitts. & Lake Erie.....1931	19,447	6,043	25,490	13.4	38,888	3,199	1,745	45.7	171	6.7	18,586	98	32.1
1930	16,159	6,345	22,504	5.8	37,414	3,072	1,744	45.6	262	9.5	25,370	100	48.9
Wabash 1931	21,507	8,852	30,359	8.8	33,226	1,803	617	19.8	392	31.4	4,773	105	50.0
1930	19,986	10,329	30,315	3.3	30,310	1,786	648	21.3	520	38.6	6,314	112	66.1
Central Eastern Region:													
Baltimore & Ohio.....1931	79,551	19,083	98,634	5.5	26,329	2,076	906	29.0	407	23.5	7,249	138	47.9
1930	78,542	26,550	105,092	5.8	25,641	2,222	985	30.0	503	27.9	9,538	141	59.7
Big Four Lines.....1931	25,944	18,685	44,629	8.6	31,566	1,958	883	29.0	405	23.0	6,472	108	50.1
1930	22,578	23,034	45,612	3.9	31,661	2,142	985	30.0	500	27.3	8,405	107	54.6
Central of New Jersey...1931	16,493	7,544	24,037	12.1	27,069	2,193	987	31.5	248	14.2	8,629	133	44.0
1930	16,620	9,189	25,809	8.0	26,831	2,243	1,047	32.5	315	17.1	11,729	131	53.3
Chicago & Eastern Ill....1931	6,021	2,412	8,433	13.3	25,578	1,497	640	26.5	436	25.8	3,916	124	36.2
1930	13,017	3,196	16,213	48.8	26,632	1,671	734	26.9	303	17.3	5,185	121	45.2
Elgin, Joliet & Eastern..1931	9,330	3,844	13,174	7.2	15,401	1,866	912	38.8	185	8.3	5,453	124	31.3
1930	9,644	5,708	15,352	3.8	16,144	2,107	1,079	39.9	269	11.2	9,123	117	45.1
Long Island 1931	792	5,051	5,843	.9	6,879	861	318	27.3	88	6.2	1,280	319	45.4
1930	710	6,442	7,152	.9	7,667	1,055	409	27.4	97	6.5	1,741	263	46.9
Pennsylvania System.....1931	241,071	55,659	296,730	6.0	31,632	2,350	1,022	28.6	349	19.6	9,738	120	49.4
1930	228,548	74,006	302,554	4.9	30,435	2,455	1,090	29.4	437	23.7	12,383	119	57.1
Reading 1931	35,755	10,317	46,072	5.6	24,038	2,085	986	34.9	360	17.8	11,432	134	48.9
1930	32,236	11,435	43,671	4.4	22,378	2,027	965	35.0	434	21.2	13,101	138	60.6
Pocahontas Region:													
Chesapeake & Ohio.....1931	47,389	9,966	57,355	2.5	45,138	3,470	1,868	47.8	1,064	41.3	19,654	76	51.4
1930	43,227	10,381	53,608	2.4	40,564	3,233	1,739	45.8	1,270	50.7	21,872	83	63.7
Norfolk & Western.....1931	36,191	5,350	41,541	1.0	45,254	3,176	1,662	44.3	896	35.1	16,379	105	51.8
1930	34,966	7,262	42,228	.9	43,477	3,183	1,659	44.1	993	39.3	18,799	113	58.4
Southern Region:													
Atlantic Coast Line.....1931	28,119	5,080	33,199	5.9	18,514	1,144	415	19.3	209	16.9	1,350	116	35.9
1930	26,747	6,637	33,384	7.0	19,824	1,324	486	20.6	296	23.5	1,917	111	45.7
Central of Georgia.....1931	7,674	2,123	9,797	18.4	20,535	1,273	475	19.8	338	25.1	1,741	124	48.5
1930	6,693	2,913	9,606	11.7	20,246	1,394	553	21.6	450	30.7	2,275	127	54.1
Ill. Cent. (inc. Y. & M. V.)1931	52,204	14,949	67,153	13.0	25,053	1,671	656	26.5	472	30.1	4,749	129	53.9
1930	47,205	17,317	64,522	7.2	25,534	1,820	726	26.7	626	39.4	6,032	127	62.4
Louisville & Nashville....1931	50,114	6,991	57,105	16.2	22,859	1,558	731	33.0	456	23.9	4,950	141	56.0
1930	47,976	11,587	59,563	11.7	21,864	1,554	744	33.7	577	29.2	6,544	132	71.4
Seaboard Air Line.....1931	16,965	4,238	21,203	11.8	19,499	1,321	486	20.2	334	25.0	1,586	129	51.1
1930	16,286	5,424	21,710	4.3	19,480	1,418	534	21.9	432	31.4	2,095	129	60.1
Southern 1931	55,798	11,128	66,926	13.7	20,187	1,307	493	20.4	284	21.2	2,847	148	41.3
1930	53,450	14,500	67,950	13.3	19,941	1,364	532	21.9	344	24.4	3,504	150	46.4
Northwestern Region:													
Chi. & North Western...1931	44,849	20,451	65,300	8.2	22,089	1,529	547	22.0	319	24.3	2,460	125	50.8
1930	50,749	25,470	76,219	8.9	22,156	1,626	624	24.5	374	25.5	3,371	128	56.7
Chi. Gt. Western.....1931	4,695	3,915	8,610	7.9	33,727	2,013	742	22.0	732	54.7	4,321	126	81.1
1930	4,293	4,881	9,174	6.7	29,308	1,966	719	21.8	763	57.0	4,797	130	104.3
Chi., Milw., St. P. & Pac.1931	62,548	14,200	76,748	2.2	24,835	1,680	656	24.1	386	26.4	2,635	117	55.1
1930	58,773	18,793	77,566	2.3	24,384	1,807	724	24.9	494	32.7	3,390	120	62.8
Chi., St. P., Minn. & Om.1931	2,215	8,427	10,642	13.0	18,403	1,286	506	23.3	368	24.9	2,288	114	50.5
1930	2,611	9,746	12,357	7.8	17,958	1,305	518	23.5	415	28.6	2,993	118	63.7
Great Northern 1931	44,049	12,754	56,803	6.6	31,649	2,288	883	25.0	420	28.2	2,866	117	45.0
1930	42,370	13,283	55,653	4.8	32,724	2,517	1,052	27.3	656	39.4	4,377	111	57.7
Minn., St. P. & S. St. M.1931	20,503	3,194	23,697	3.9	19,528	1,323	532	22.3	268	18.5	1,467	102	59.5
1930	19,947	4,781	24,728	4.1	20,697	1,630	719	24.9	415	25.1	2,355	96	67.5
Northern Pacific 1931	41,361	5,352	46,713	10.2	24,811	1,726	698	22.7	314	20.2	2,272	141	44.9
1930	39,549	6,287	45,836	8.5	26,059	1,949	813	24.3	457	28.1	3,238	143	57.4
Ore.-Wash. R.R. & Nav..1931	8,206	2,733	10,939	4.1	23,520	1,521	628	24.2	328	19.9	1,617	147	47.0
1930	7,608	3,489	11,097	4.7	23,701	1,738	736	25.7	459	26.7	2,298	157	53.5
Central Western Region:													
Alton 1931	10,569	3,562	14,131	20.5	26,723	1,451	557	23.9	287	19.6	4,050	123	58.8
1930	10,031	4,160	14,191	6.5	24,347	1,539	579	23.8	391	26.9	5,555	134	71.1
Atch., Top. & S. Fe (incl. P. & S. F.).....1931	67,078	11,314	78,392	9.4	33,720	1,940	636	20.2	442	35.2	3,000	100	65.7
1930	64,161	15,603	79,764	7.5	34,967	2,125	681	19.8	588	47.6	4,163	101	84.2
Chi., Burl. & Quincy....1931	45,534	14,148	59,682	6.6	26,053	1,766	748	25.4	503	33.5	3,243	117	62.2
1930	45,807	19,050	64,857	5.5	27,140	1,947	849	26.6	614	39.0	4,292	116	66.0
Chi., Rock I. & Pacific..1931	38,458	11,042	49,500	11.6	23,099	1,497	585	23.7	409	27.8	2,655	131	58.0
1930	35,953	15,928	51,881	8.1	22,908	1,594	632	23.9	484	32.6	3,309	145	61.5
Denver & R. G. Wn.....1931	12,928	4,184	17,112	3.2	22,610	1,642	580	21.3	382	30.1	2,556	160	56.1
1930	11,795	5,151	16,946	2.4	21,273	1,605	585	22.0	504	37.1	3,383	159	74.2
Los Angeles & Salt Lake.1931	4,430	1,348	5,778	2.8	26,908	1,656	600	19.6	591	44.3	2,750	134	58.9
1930	4,428	1,385	5,813	2.4	25,350	1,783	663	21.9	705	49.8	3,359	132	63.0
Oregon Short Line.....1931	10,090	6,005	16,095	5.5	27,593	1,855	677	23.1	433	31.3	2,756	107	63.3
1930	8,912	5,716	14,628	4.5	27,087	1,949	753	24.5	682	44.9	3,930	109	84.2
So. Pacific—Pacific Lines.1931	42,455	21,313	63,768	12.7	28,567	1,973	640	20.1	406	32.8	2,894	111	51.9
1930	41,237	25,161	66,398	7.2	28,826	2,083	701	20.7	563	43.0	4,158	114	69.2
Union Pacific 1931	24,204	10,872	35,076	7.9	45,943	2,336	719	19.1	763	68.3	7,104	108	86.5
1930	22,919	11,710	34,629	8.5	42,716	2,134	686	19.0	1,104	91.3	10,151	102	125.8
Southwestern Region:													
Gulf, Colo. & S. Fe.....1931	11,723	2,460	14,183	2.8	27,613	1,831	760	24.6	344	21.0	2,481	94	54.0
1930	11,673	3,099	14,772	3.0	31,799	2,155	851	24.3	416	27.7	3,129	93	63.4
Mo.-Kans.-Texas Lines ..1931	12,172	3,773	15,945	4.6	26,534	1,725	638	22.1	460	34.6	2,236	82	52.1
1930	14,086	5,948	20,034	5.2	27,805	1,975	763	23.1	472	34.3	2,977	89	54.7
Missouri Pacific 1931	30,625	15,326	45,951	12.2	27,146	1,721	667	24.5	579	38.8	3,592	120	70.7
1930	31,128	17,928	49,056	9.9	27,617	1,826	730	25.2	709	45.8	4,685	119	81.4
St. Louis-San Francisco..1931	26,745	5,853	32,598	3.3	21,201	1,409	530	23.3	361	26.1	2,273	132	47.2
1930	25,308	8,098	33,406	3.2	21,034	1,565	608	23.8	434	30.4	2,806	133	54.6
St. Louis Southwestern Lines 1931	5,786	3,014	8,800	10.1	20,380	1,319	488	20.7	352	25.9	1,629	110	44.8
1930	6,618	3,147	9,765	7.2	22,289	1,607	609	21.4	420	30.2	2,194	109	53.9
Texas & New Orleans....1931	12,137	11,061	23,198	7.9	20,883	1,415	534	23.0	379	26.8	1,877	93	50.8
1930	11,778	12,943	24,721	5.4	21,064	1,511	580	23.3	465	32.2	2,457	94	61.5
Texas & Pacific.....1931	5,884	4,582	10,466	12.3	23,085	1,627	595	21.8	520	37.1	2,795	90	37.9
1930	5,856	4,963	10,819	6.9	25,611	1,796	672	23.4	722	51.7	4,001	89	47.6

North Western Buses Supplement Train Service

(*Continued from page 989*)

which the contractor collects and turns in to the railway. The railway pays the contractor a fixed sum per month for this service, which is in substitution for that previously performed by passenger trains. Similar, between Trempealeau, Wis., and Galesville, a distance of 7.1 miles, an independent operator handles passengers, baggage, express and mail for the railway on two daily round-trip schedules, connections being made with certain through trains of the North Western. In this case, as in the first mentioned, a fixed sum per month is paid to the contractor for the services performed, and railway tickets, good for transportation on the bus, are collected by the contractor and turned in to the railway.

Between Deadwood, S. D., and Lead, a distance of 4.6 miles, an independent bus operator has a contract for the transportation of North Western passengers and their hand baggage. Motor vehicles connect at Deadwood with all passenger trains. Railway tickets honored on the buses are turned in to the railway and the contractor receives a certain sum per month for all services performed. This service was substituted for passenger train service operated by the North Western, which was withdrawn on account of light patronage of trains between these points. Between Rapid City, S. D., and Hermosa, 21 miles, and between Rapid City and Hot Springs, 62.6 miles, one-way tickets issued via the North Western between these and intermediate points are honored on the buses of an independent operator. For this service the railway allows the bus company the regular one-way rail fare between the points covered by the tickets honored on the buses.

International Offers New 1½-Ton Motor Truck

THE International Harvester Company, Chicago, now has in production a new truck, designated as model A-3, which has a rated capacity of 1½ tons, is powered by a 6-cylinder engine, and is available in two wheelbases, 136 in. and 160 in. The maximum carrying capacity, including body, cab, equipment and payload, is 6,450 lb. The overall length of the 136-in. chassis is 200 in., and that of the 160-in. chassis, 228½ in.

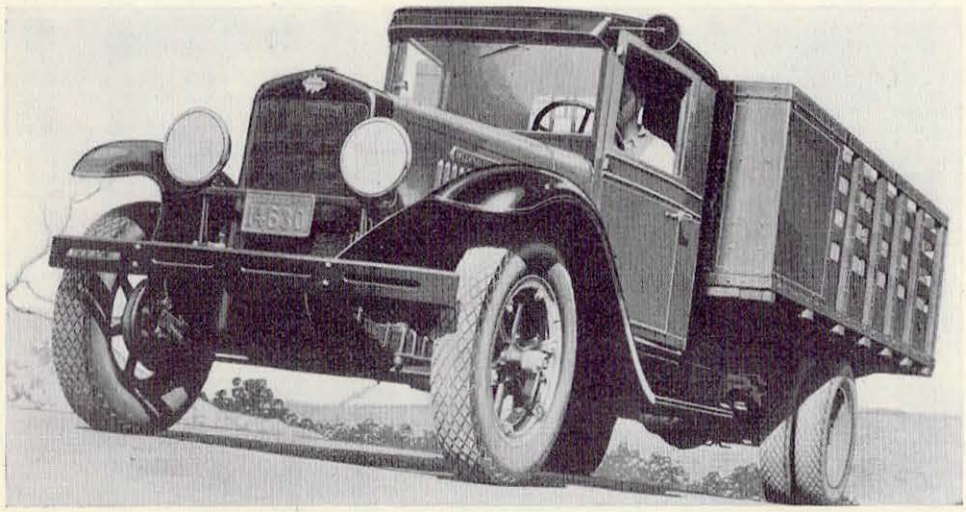
The frame is of heavy pressed steel channels, 7 in. deep at the center and reinforced with a number of cross members to provide rigidity as well as flexibility to meet varying load and road conditions. The front and rear springs are of the semi-elliptic type, and semi-elliptic auxiliary rear springs are also provided. The rear axle is of the full-floating spiral-bevel-gear type, with axle shafts of chrome-molybdenum steel. Pinion, differential and wheel bearings are of the tapered roller type. Axle reductions of 5.285 to 1 and 6.16 to 1 are available.

Brakes and Engine

The four-wheel service brakes are of the mechanical, self-energizing internal-expanding shoe type and are fully enclosed. The brake drums on the front wheels are 14 in. in diameter and 2 in. wide, while those on the rear wheels are 16 in. in diameter and 2½ in. wide. The wheels are of the cast spoke type, upon which are mounted truck-type pneumatic tires, 30 in. by 5 in. on the front wheels and 32 in. by 6 in. on the rear wheels.

The six-cylinder engine is cast in block, and is of the detachable L-head type with a bore of 3¼ in., and a stroke of 4½ in., the displacement is 224 cu. in. The brake horsepower rating is 54 hp. at 2,700 r.p.m., while the N.A.C.C. rating is 25.35 hp. The maximum torque is 138 ft.-lb. at 700 to 1,000 r.p.m. The engine has four bronze-backed babbitt-lined main bearings. Other features of the engine are the pressure feed lubrication to all main, camshaft and connecting rod bearings, a pump circulation cooling system with a fin-and-tube type radiator, high tension, battery-type ignition, with a semi-automatic distributor, and a balanced-flow-type carburetor fitted with a centrifugal air cleaner. The clutch is an 11-inch. single plate, with a vibration damper. The transmission provides four speeds forward and one reverse and is of the sliding-gear, selective type, mounted in unit with the engine.

THE TRAFFIC CLUB OF FORT WORTH, TEXAS, has elected the following officers for 1932: President, B. D. Locke, traffic manager of Monnig & Co.; First Vice-President, T. K. Hale, traffic manager of the Texas Electric Service Co.; Second Vice-President, D. G. Griffin, Sproles T. & S. Company, and Secretary-Treasurer, D. H. B. Todd, Ft. Worth & Denver City, re-elected.



The New International Truck Is Available in Wheelbases of 136 in. and 160 in.

Odds and Ends Department Appears on Next Left Hand Page

Plan For Tomorrow's **Greater Profit**

● Planning for tomorrow's greater profit should govern the railroad's spending today.

Carnegie scrapped one steel process after another, sometimes before the shine was off the million-dollar equipment. He was investing in greater future profits and a greater competitive advantage.

With the return of normal business, the necessity of maintaining the maximum net will prohibit the introduction of the older and less efficient locomotives into a schedule of operation adjusted to the use of highly efficient motive power.

Do not let the old locomotives waste the increasing gross. Buy new Super-Power and keep efficiency up to its present standard.

LIMA LOCOMOTIVE WORKS INCORPORATED

LIMA LOCOMOTIVE WORKS • Incorporated • LIMA • OHIO

Odds and Ends . . .

Railway Alumni News

College magazines are not the only publications which devote space to alumni. The current issue of the Norfolk & Western employees' magazine contains an "alumni" page, which tells of the careers of former Norfolk & Western men who, after leaving the service of the railroad, have made good in other lines.

Champion Directors

P. E. Crowley, who is retiring from the Presidency of the New York Central on January 1, is runner-up in the directors' championship of New York. He is a member of 84 boards of directors, second only to Henry L. Doherty, head of the Cities Service Company, who is a member of 123 boards. L. F. Loree, president of the Delaware & Hudson, is also among the first five.

Antique Rails Find Place in Museums

Sections of old rails—the iron, not human, kind—recently brought to light in Arkansas, which originally were laid on the old Memphis & Little Rock Railroad, now a part of the Chicago, Rock Island & Pacific, are soon to be placed on permanent exhibit in the Museum of Science and Industry of Chicago and the Transportation Library of the University of Michigan. According to an investigation made by the Rock Island, these rails were made in France and shipped by water to Memphis at the close of the Civil War. The rails contain the inscription, "Vezin. Av." They were cast entirely of iron and are still in an excellent state of preservation. The rails were brought up the Mississippi river from New Orleans by boat and were laid originally in the neighborhood of Du Vall's Bluff, Ark. The old Little Rock & Memphis Railroad was one of the first steam railways constructed west of the Mississippi river, and was first put into operation west of Memphis in 1857. It was used during the Civil War for the transportation of troops. After the close of the Civil War, the line was rebuilt and the imported rails were laid.

The Indomitable Flivver

"If a dog bites a man, that is not news," says a quotation familiar to every newspaper man. Neither is it news any more when a motor truck crowds a small automobile off the highway. On the other hand, to continue the quotation above, "If a man bites a dog, that is news." This being so, there is no doubt of the news value of the dispatch which was sent over the wires from Scranton, Pa., by H. J. Mullaghy, division superintendent on the Lackawanna, to several of his superior officers. This dispatch contained the startling news that at 8:50 p.m. on November 26, a motor truck, loaded with milk and rolling along the highway just east of the New Milford, Pa., tower of the Lackawanna, was crowded off the highway by a Ford sedan, causing the truck to go through the guard rail and over the embankment. In the fire which destroyed the truck after its gasoline tank exploded, one of the Lackawanna telegraph poles was burned and the telegraph and telephone wires at the point were broken. Mr. Mullaghy was unable to contribute the name of the owner or driver of the Ford sedan, which seems a pity when he is such a logical candidate for some sort of medal.

To Tunnel Through a Building

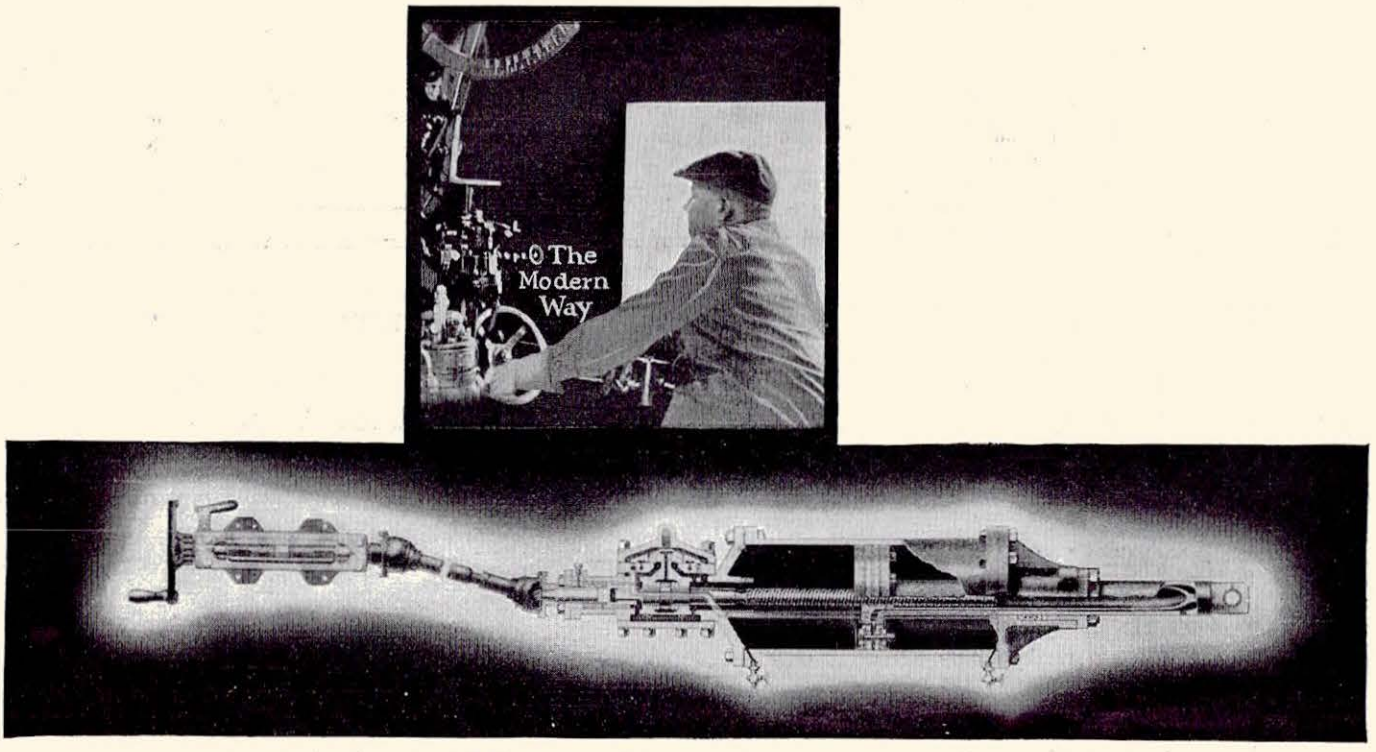
Putting a tunnel through a laboratory building full of delicate instruments and housing any number of scientific experiments—and, what is more, without injuring or disturbing any of these—is one of the jobs which the New York Central is taking in its stride in connection with its west side improvement project on Manhattan Island. At one point the new viaduct, which it is constructing, will go straight through the Bell Telephone Laboratory building, between the second and fifth floors. The railroad has contracted to build the foundations and enclose the viaduct without interrupting laboratory work, and in such a manner that the trains will not disturb the workers after service over the line begins. Elaborate engineering studies have been carried on by the railroad, in order that the job shall be properly isolated and to allow the medical aid station of the laboratory, occupying the ground floor space just below the place where the viaduct will run, to remain in its quarters during construction as well as after. Sound-deadening materials will be used in the walls enclosing the viaduct and the tracks will be cushioned so that vibration will not be transmitted to the building.

A British Sales Idea

You take a chance when you buy a ticket on one of the British railways these days. Turning human nature to their own advantage, these roads are printing and selling special tickets, each of which encloses a voucher. Some of these vouchers are merely advertisements and have no monetary value but if you are lucky, you may get one which you can convert into merchandise. Of the three tickets reproduced one contains only an advertisement but the others are good for so much in trade at a business establishment, the name of which is printed on the voucher. Announcement of the introduction of these new tickets, and a description of the methods used in printing them, appeared in the news columns of the *Railway Age* for March 14, page 565.

Specimen L. M. & S. Tickets with Their More or Less Valuable Enclosures

News Department Begins on Next Left Hand Page



ACCURATE CONTROL
FOR BIG POWER

IN days gone by it was possible for the engineman to change cut-off by hand while the locomotive loafed along at 15 miles per hour.

But the freight of to-day thinks nothing of 40 to 50 miles per hour. At such speeds, the engineman is powerless to change cut-off by hand.

Yet, Franklin Power Reverse Gears readily handle the greater stresses and put in the engineman's hands the means of getting and keeping the cut-off best suited to the operating conditions of the moment. An emergency steam connection insures operation at all times.

Control big power by Franklin Power Reverse Gears and get better performance from your locomotives.

THE FRANKLIN SLEEVE JOINT

Saves gaskets and lowers maintenance

FRANKLIN RAILWAY SUPPLY CO., INC.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

NEWS

Railroads Assent to Loan Pool Plan

Every effort to be made to have plan operative and rates effective Jan. 1

Practically unanimous assent has been given by the eligible railroads, by formal action of their boards of directors or executive committees, to the plan for the organization of the Railroad Credit Corporation to make loans to roads failing to earn their interest charges from the proceeds of the $100,000,000 rate increase authorized by the Interstate Commerce Commission. By December 22 responses had been received from roads operating 229,053 miles, with one dissent from a road operating 150 miles.

This means that the plan will be made effective, of which there has been no doubt since the meeting of the railway executives at Washington on December 11, but their approval required formal execution of the contract. Every effort will be made to have the plan operative and the rates in effect by January 1. It is proposed to file a master tariff on five days' notice.

Plans have been under discussion with certain banks for making loans to anticipate the funds that will be available from the rate increase, none of which, under the plan, would be available before March. While the corporation has not specific power to borrow money itself, except for its own expenses, it is expected that some plan will be adopted to meet the situation. Daniel Willard, Jr., has been elected secretary and treasurer of the corporation, with office at Washington.

Various estimates as to the probable amount of applications for loans from the fund have been made, ranging from $50,000,000 up. Only rough estimates are available of the make-up of the "railroad bread line" because only ten months' earnings reports are yet available and exact figures as to the changes since last year in interest requirements and in income other than that from operations are not reported monthly. Also the amounts which various roads may find it necessary to borrow from the corporation will depend to some extent on their "other resources" and in some instances it may be found advisable for them to borrow from parent companies rather than from the fund. The number of Class I roads failing to earn interest charges has been estimated at 80 and the deficiency as high as $90,000,000, but some 14 Class I roads will not be eligible to participate in the fund because some are already in receivership or derive more than half their earnings from passenger service. The net railway operating income for this year has been estimated at $535,000,000. Interest charges last year were $502,000,000 and will be somewhat greater this year because of the large increase in short-term borrowings. Other income last year was $348,000,000 but will be considerably less this year. Thirty-five Class I roads failed to earn their operating expenses in the first ten months of the year.

New York Central to Run "All-Expense" Week-End Excursions

"All-expense" Pullman-car excursions from New York to Montreal, Que., and Lake Placid, N. Y., with railroad and Pullman fares in both directions, hotel accommodations and meals included under a single fare, are to be operated by the New York Central on each of the four week-ends from January 8, 1932, to January 29, inclusive. Rates for these trips vary slightly, depending on the Pullman accommodations selected, the minimum individual fare being $32.50 with two persons in an upper berth; the maximum $38.50 with two persons in a drawing room, and the standard being $35, for one person occupying a lower berth. In all cases, however, the rate charged covers transportation, a night's lodging at one of the leading Montreal or Lake Placid hotels, and necessary meals. Personal expenses and individual sightseeing are extra.

Excursions for both destinations leave New York on Friday evening, arriving at Montreal and Lake Placid early the following morning. Returning, trains leave Sunday evening, and reach New York early Monday morning. Times vary slightly, according to the destination and date selected. Facilities for winter sports at both destination points are featured in the advertising of the trips.

In addition to these longer excursions the New York Central is also planning to run on Sundays during the coming winter special sports trains to points in the Catskill and Berkshire mountains. Like the "snow trains" operated out of Boston last winter by the Boston & Maine, these will carry coaches and dining cars; will leave New York in the morning to return at night, and will lay over for the day at the nearest point available to that selected for the sports. As was the case in Boston a year ago, New York stores are co-operating with the railroad in suggesting proper equipment to prospective passengers and in making reservations.

Foresees Vast Freight Service Improvement

Eysmans sees freight trains at passenger speed upholding railways' supremacy

Establishment of freight service far faster than any now offered by the railroads, and making possible door-to-door deliveries, between cities, in materially less time than is practicable with the fastest through trucking, was predicted by Julien L. Eysmans, traffic vice-president of the Pennsylvania, in an address before the Great Lakes Regional Advisory Board at Detroit, Mich., on December 16.

Mr. Eysmans expressed confidence in the ability of the railroads to meet any advantages which trucks are capable of offering, either in rates or speed of service, except in terminal zones or the shorter hauls. He voiced the belief that the development of the new fast railroad schedules, which he termed "premier freight service," and which would involve the use of trucks for store-door collection and delivery at each terminal, will be one of the features of railroad progress when industrial activity and the volume of traffic again approach normal. He spoke, however, with optimism as to the future of commercial trucking, and said it presented almost "limitless opportunities of a perfectly sound economic character" in co-ordination with railroads.

Mr. Eysmans asserted that regulation of railroads has reached its climax and will be liberalized in the future. On the other hand, the regulation of highway trucking is just beginning. Eventually, he stated, he expects as a result of public demand to see conditions virtually equalized between them, with full publicity for trucking rates and practices such as are enforced upon the railroads.

Continuing he said: "It is logical to assume that we shall in time see rail and highway transport upon a general parallel as to regulation. Railroads will then recoup the benefit of the physical advantages of economy and efficiency of operation which are naturally theirs, and which result from their superior capacity to transport maximum loads at high speeds with minimum mechanical and man power, and to maintain continuous operation regardless of weather conditions.

"I do not mean that truck traffic is

(Continued on page 997)

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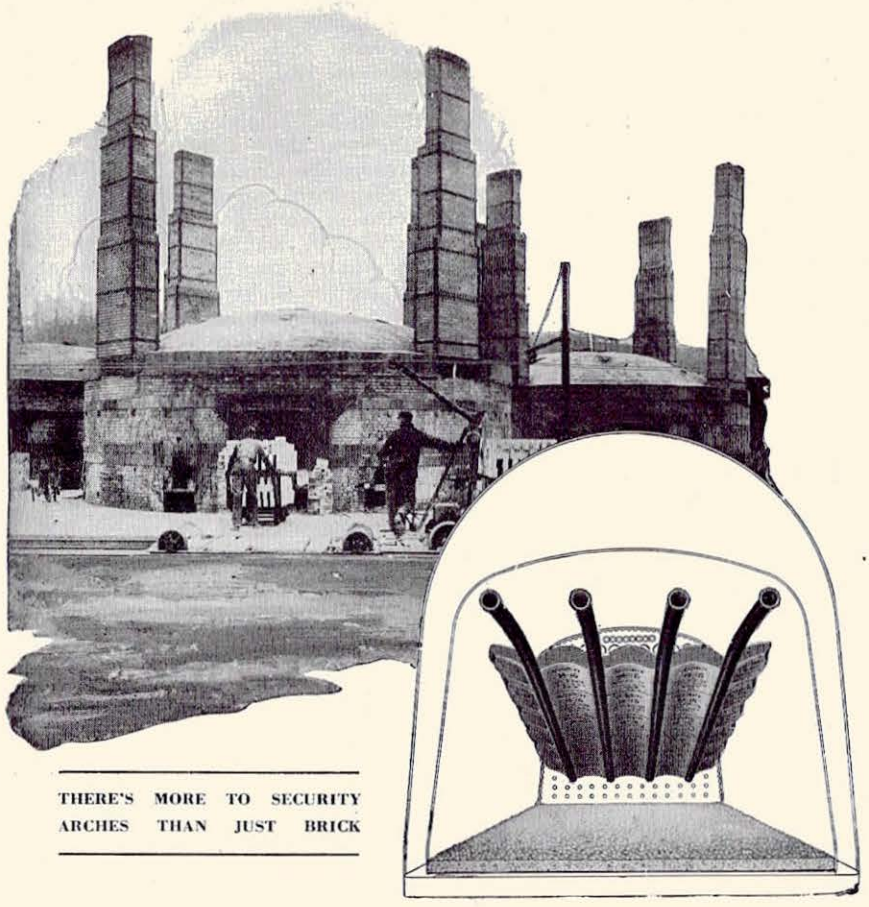


THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

There's More to An Arch *Than Just Brick*

GOOD ARCH BRICK is, of course, a fundamental to long locomotive arch life.

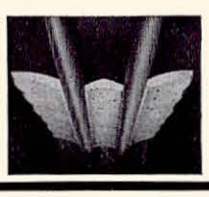
But how this brick is used is equally important. Here enters experience in locomotive combustion.

American Arch Company service gets the arch off to a good start by designing it properly and fitting it to harmonize with the other elements of the locomotive.

Then, after the locomotive is in operation, American Arch Company places at the railroad's disposal a service that will insure getting everything possible out of the Arch Brick.

Only the American Arch Company has the experienced organization to make this possible.

HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion Specialists

Freight Delivery Plan Subject of Discussion

Railroads to present new schedule of charges to New York shippers on December 29

As a further step toward the establishment of store-door collection and delivery of carload freight in New York, railroads serving the metropolitan area are expected to present to shippers a revised schedule of rates for such service, based on a recent study of trucking costs, at a meeting to be held between representatives of both groups on Tuesday, December 29. Announcement of this latest move in the New York delivery situation, which has been under discussion for some years, was the leading development at a meeting of the Atlantic States Shippers' Advisory Board held in New York on December 17 and 18.

As reported from time to time in previous issues of *Railway Age*, the railroads have expressed a willingness to truck freight, through the medium of the Railway Express Agency, between existing Manhattan pier stations and points of origin or destination. The shippers, on the other hand, have favored some plan which would result in direct delivery of freight by truck from New Jersey railheads, thereby eliminating the necessity of moving freight through the piers. Such a scheme, by making it possible to close present pier stations, would, they contend, produce economies in delivery costs sufficient to permit lower charges than those originally proposed by the roads. If the new rates to be presented at the meeting on December 29 meet the approval of the shippers, they will be referred back, together with any other suggested modifications in the original plan, to the presidents' conference committee, composed of the heads of railroads serving the New York area, for further consideration by that group and by the traffic and operating vice-presidents of the railroads concerned.

Shippers' representatives expected to attend the coming meeting include W. H. Chandler, chairman of the New York Shippers' Conference and traffic manager of the Merchants' Association, W. J. L. Banham, president of the New York Board of Trade, and C. L. Hilleary, general traffic manager of the F. W. Woolworth Company and general chairman-elect of the Shippers' Advisory Board.

In addition to the announcement of progress in the delivery situation, the advisory board meeting was featured by addresses by A. J. Brosseau, president, Mack Trucks, Inc., on How Motor Trucks and Railroads, Through Co-ordination of Effort, Can Best Serve the Transportation Needs of the Country; by W. C. Kendall, American Railway Association, Washington, D. C., on general transportation conditions throughout the country, and by A. P. Stevens, district manager, Car Service Division, A. R. A., at New York, on conditions in the board's own territory.

Estimates of commodity movement for the first quarter of 1932, as drawn up by the board, indicate that car loadings will run 4.1 per cent under those for the corresponding period of 1931, and that a total of 611,259 cars will be required to handle the traffic to be offered to the railroads during the next three months. The principal increases are expected in fresh fruits, other than citrus, hay, straw and alfalfa, and potatoes; while large decreases are anticipated in loadings of grain, ore and concentrates, gravel, sand and stone, lumber and forest products, iron and steel, machinery and boilers, cement, brick and clay products, lime and plaster, and fertilizer. Shipments of automobiles, trucks and parts are expected to drop by 7.5 per cent, and loadings of anthracite coal and coke are estimated to run 0.7 per cent lower than in the first quarter of 1931.

Great Lakes Shippers' Board

The regular meeting of the Great Lakes Regional Shippers' Advisory Board was held at Detroit, Mich., on December 16, with an attendance of about 500. The forecast of freight business for the first three months of 1932, based on the reports of 24 commodity committees, shows a probable decrease of five per cent. Of the total estimated number of cars required in the three months, 289,114, about 45 per cent represents those of commodities in which no change is expected, as compared with the same quarter of 1931. The only important increase is that in potatoes, 140 per cent above the 1,168 cars shipped in the first quarter of 1931. The principal decreases expected are hay, straw, etc., 13.5 per cent; fresh vegetables, other than potatoes, 16 per cent; gravel, etc., 27 per cent; machinery, etc., 13 per cent; brick and clay 13 per cent; agricultural implements, other than automobiles, 18 per cent; fertilizers 25 per cent.

An abstract of the remarks of J. L. Eysmans, vice-president of the Pennsylvania, who addressed the meeting is published elsewhere in this issue.

I.C.C. Bureau Reports Best Condition of Locomotives Ever Recorded

"The best condition of locomotives in service ever recorded" is reflected in the reports of the Bureau of Locomotive Inspection of the Interstate Commerce Commission, according to the annual report of A. G. Pack, chief inspector. During the year ended June 30, 1931, 10 per cent of the steam locomotives inspected by the bureau inspectors were found with defects or errors in inspection that should have been corrected before being put into use, as compared with 16 per cent for the previous year. A summary of all accidents and casualties to persons occurring in connection with steam locomotives compared with the previous year shows a decrease of 22 per cent in the number of accidents, an increase of 23 per cent in the number of persons killed, and a decrease of 15.9 per cent in the number of persons injured. The increase in the number killed was due to one particularly violent boiler explosion, due to lapse of ordinary caution on the part of the enginehouse force rather than to any structural defect.

Briefs on Reciprocal Buying Filed with I.C.C.

Pennsylvania and Erie deny use of improper or unlawful practices in purchasing

The Pennsylvania and the Erie have filed with the Interstate Commerce Commission briefs in connection with the commission's investigation of reciprocity in purchasing and routing.

The Pennsylvania, after abstracting testimony given by its officers during the hearings, submitted that the record discloses no improper policy pursued by this company in the matter of purchases and no improper application of its policies in specific instances. The Erie filed a brief denying that there is anything unlawful in reciprocal buying and routing, saying the practice had been followed for 15 years and that there has never been any decision holding it unlawful. "As to these respondents," it said in behalf of the Erie and subsidiaries, "the proceedings should be dismissed with a finding that the practice as followed by these lines is not unlawful and no order, other than the order of dismissal, need be issued. Unless the practice of reciprocity in purchasing and routing, in its fair sense, be unlawful the inquiry is closed so far as we are concerned. We say that it is practiced by us; and that it is fairly practiced; and that as practiced by us it is not only lawful but is good business management."

Arguments were heard by the Federal Trade Commission on December 16 on its complaint against the Mechanical Manufacturing Company, of Chicago, and traffic officials of Swift & Co., at which counsel for the company asked that it be dismissed on the ground that the company had gone out of the draft gear business a few days before the complaint was filed and that its affairs are being wound up. Counsel for the commission objected unless the company signed a satisfactory stipulation.

New Railway Commissioners Named in Canada

Two appointments filling the vacancies on the Board of Railway Commissioners were announced last week in Ottawa by Hon. R. J. Manion, Minister of Railways and Canals.

F. Albert Labelle, notary, of Hull, Quebec, has been appointed to the vacancy caused by the resignation of Thomas Vien, who was deputy chief commissioner. The vacancy existing because of the death of Calvin Lawrence has been filled by the appointment of George A. Stone, of Moncton, N. B. Mr. Labelle will take the post of deputy Chief Commissioner.

Mr. Labelle was born in St. Placide, Quebec, and went to Hull in 1897. He has been secretary of the Hull county council for the past 29 years and at one time was president of the Association of Notaries of Quebec. In 1904 and 1908 he entered the federal political field and had as his opponent Sir Wilfrid Laurier. The contest was in the then Ottawa coun-

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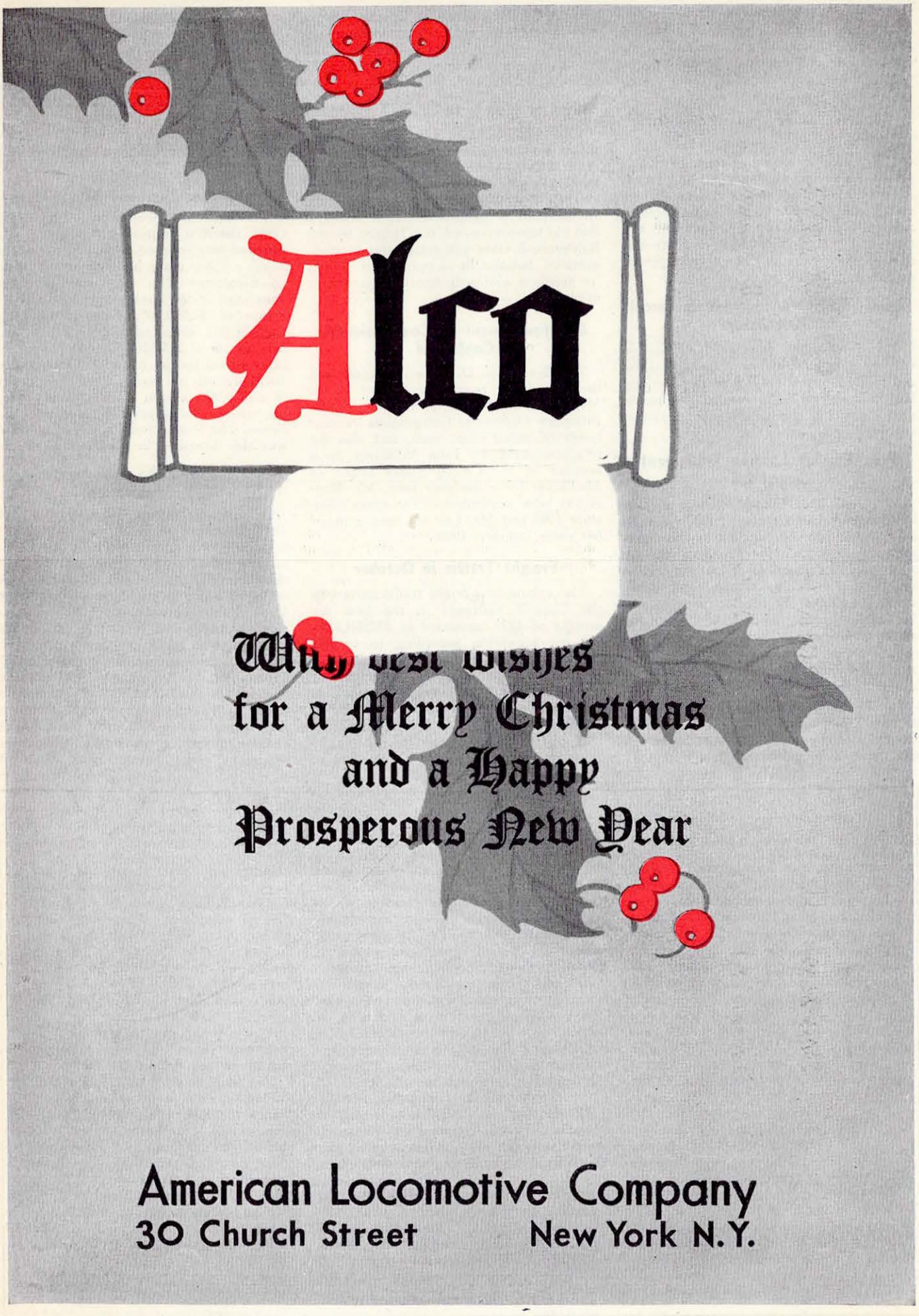
Alco
With best wishes
for a Merry Christmas
and a Happy
Prosperous New Year
American Locomotive Company
30 Church Street New York N.Y.

ty. Mr. Labelle was defeated. In Wright county he again sought federal political honors in 1921-25 and 1926 but was unsuccessful. He was educated at Rigaud and received his diploma from Laval University.

George A. Stone was born July 1, 1872, in London, Eng., came to Canada in 1890, and entered the service of the Intercolonial Railway on November 20, of that year. During recent years he has served on numerous commissions in New Brunswick, including the Minto Coal Commission in 1926. The following year he was named as commissioner to investigate certain phases of the Workmen's Compensation Act.

I.C.C. To Hear Argument on Parcel Post Rates

The Interstate Commerce Commission will hear argument on February 4 on the application of the Postmaster General for its approval of a revision of parcel post rates. There will be no proposed report.

Free Use of Loading Equipment Suspended

The Interstate Commerce Commission has suspended until July 21, 1932, pending an investigation, a tariff filed by the Pennsylvania providing for the free use by shippers and consignees of loading cranes, including locomotive cranes, and other station facilities for the loading and unloading of heavy and bulk freight at stations.

New Member of Moffat Tunnel Commission

Lee R. Jones, of Craig, Colo., has been appointed a member of the Moffat Tunnel Commission by Governor Adams to fill the vacancy caused by the resignation of Charles J. Wheeler, of Yampa, who moved from the state. The appointment is temporary until the place shall be filled by the voters in the general election of 1932.

Selling of Monon to B. & O. Opposed

The Indiana State Chamber of Commerce is planning to file an intervening petition with the Interstate Commerce Commission opposing the plan of the Baltimore & Ohio to take over the Chicago, Indianapolis & Louisville. It is charged that the absorption of the Monon by the Baltimore & Ohio will retard the development of Indiana in shipping and selling its products and will restrict competitive markets.

Re-Appointment of Commissioners Confirmed

The Senate on December 21 confirmed the President's reappointments of B. H. Meyer and W. E. Lee as members of the Interstate Commerce Commission for new terms of seven years each, and also the re-appointment of John Williams as a member of the United States Board of Mediation for a five-year term. Mr. Meyer has been a member of the commission since 1905 and Mr. Lee has been a member since January, 1930.

Freight Traffic in October

The volume of freight traffic moved by the Class I railroads in the first ten months of 1931 amounted to 292,404,224,000 net ton-miles, according to reports compiled by the Bureau of Railway Economics. This was a reduction of 68,384,739,000 net ton-miles, or 19 per cent under that of the corresponding period in 1930 and a reduction of 30 per cent under that of the same period in 1929. The Eastern district reported a reduction of 18.2 per cent, the Southern district 18.7 per cent, and the Western 20.1 per cent.

For October, freight traffic amounted to 30,587,539,000 net ton-miles, a reduction of 22.2 per cent; and it was a reduction of 36.1 per cent under October, 1929. The Eastern District, for October reported a reduction of 18.8 per cent; the Southern district 22.5 per cent, and the Western 26.3 per cent.

Railroad Brotherhood Bank Closes

The Standard Trust Bank, Cleveland, Ohio, the first venture into finance of a railroad brotherhood, was placed in the hands of the state banking department on December 21. The last financial statement of the bank showed a capitalization of $2,000,000, deposits of $18,633,998 and assets of $22,047,026, with a surplus of $1,115,510. Among the accounts held by the bank was one of the Brotherhood of Locomotive Engineers of $2,000,000, a sum set up for use during strikes and adverse economic situations. The brotherhood's insurance fund was also deposited in the bank.

California to Investigate Transportation

An investigation of rail, motor and water transportation in California was ordered by the California Railroad Commission on December 16 in an effort to eliminate discrepancies in rates. A series of hearings will begin on January 4, to which representatives of the carriers, shippers and officers of cities and counties will be summoned or invited. The Southern Pacific, the Pacific Motor Transport, the Atchison, Topeka & Santa Fe and the Railway Express Agency filed a petition with the commission asking for a rehearing of a recent decision granting pick-up and delivery service to Valley Motor Lines, the latter

Give the Railroads a Chance

Stock market quotations revealing railroad stocks at unprecedentedly low prices reflect in part the recent refusal of the Interstate Commerce Commission to grant the requested increase in freight rates and, further, a general fear of what government regulation is doing to our major systems of transportation. The investor is afraid—and with good reason—of what the I. C. C. may do to the railroads.

Congress has numerous important responsibilities confronting it in the approaching session, but few questions transcend in emergency the problem of the railroads. If Mr. Joseph B. Eastman of the Interstate Commerce Commission is to continue to dominate that group as he has in the past, then the future of the railroads is far from bright. The *Railway Age* rightly says of Commissioner Eastman that "he has raised himself to a position where he bestrides not only the Commission, but the railroad industry, like a Colossus." He frankly favors government ownership of the railroads; and, if the decisions which he dominates serve to make more difficult profitable operation under the present system of private capital, he merely is holding true to his convictions. But the American public fortunately is not in sympathy with Mr. Eastman's theories. The period of government operation of the railroads under Director General McAdoo, being the most wasteful and uneconomic period in the history of American transportation, was all the lesson in government ownership the public needed.

The trouble with the railroads now is not only too much Eastman, but too much regulation in general. There was a time when, with the railroads supremely alone in control of transportation, strict governmental regulation was defensible; but today the picture has changed. The railroads no longer are prosperous predators, preying upon one another. They, rather, are underprivileged by comparison with their competitors in the fields of highway and marine transportation. They not only are heavily taxed on every inch of right-of-way and every item of equipment, while their competitors share the subsidy of public highways and public harbors, but they are so tightly restrained by federal law and I. C. C. regulation that their profitable operation is hazarded.

It is not our opinion that all federal supervision of the railroads should be eliminated or that the I. C. C. should be dissolved; but, if the railroads are to have half a chance to render efficient and profitable service, there must be an easing up on regulation of them and some form of regulation for their competitors.

The new Congress should make a thorough-going study of the whole transportation problem with an eye to freeing the railroads from unfair restrictions.

—*From the Grand Rapids (Mich.) Herald.*

Continued on Next Left Hand Page

Hours by sled— minutes by rail—

Far into the north woods the steel rails go to bring out the timber —winter or summer— swiftly and economically on Gary Wrought Steel Wheels

U.S. STEEL

Illinois Steel Company

Subsidiary of United States Steel Corporation

General Offices: 208 South La Salle Street, Chicago

being accused of having operated illegally between Oakland and Fresno; and 63 motor coach organizations under the title of California Interurban Motor Transportation Association, has charged the Santa Fe and the Modesto & Empire Traction Company with unlawful rate cutting and illegal operation of a pick-up and delivery service.

Club Meetings

The Indianapolis (Ind.) Car Inspection Association will hold its next meeting on Monday evening, January 4, at Hotel Severin, Indianapolis. The subject of discussion will be the new A. R. A. Rules.

The Cleveland (Ohio) Railway Club will hold its next meeting on Monday evening, January 11, in the B. R. T. Building. The discussion will be on the new A. R. A. Rules.

The Northwestern Car Men's Association will hold its next meeting on Monday evening, January 18, at the Young Men's Christian Association, Minnesota Transfer Railway, Prior and University Avenues, St. Paul, Minn. The meeting will be devoted to discussion of the new interchange rules.

The Southern & Southwestern Railway Club will hold its next meeting at the Ansley Hotel, Atlanta, Ga., on Thursday, January 21, at 10 a. m. The manufacture of refractories, by the Harbison Walker Refractory Company, Birmingham, Ala., will be illustrated by motion pictures.

The Milwaukee, Wis., Traffic Club will hold its annual dinner on January 20. H. A. Scandrett, president of the Chicago, Milwaukee, St. Paul & Pacific, will be the speaker of the evening.

Canadian Royal Transport Inquiry Making Rapid Progress

The Royal Commission named by the Dominion Government to inquire into the railway situation in Canada has completed the first half of its itinerary with its return to Ottawa for the Christmas week. Its hearings, public and private, extended to the Pacific Coast. After the short holiday the Commission will go to the Maritime provinces and then return for hearings in Montreal, Toronto and Ottawa, after which they will submit their report to the Government in time, possibly, for some action at the coming session of Parliament which will open on February 4. It is noteworthy that in the public hearings in Western Canada there was talk of amalgamation of Canada's two great railways, but in almost every case it was with a view to a complete public monopoly of railway transportation.

Unification of the Canadian National and Canadian Pacific commission control of motor bus and truck traffic throughout the Dominion and alteration of the freight rates schedule on coal shipments were urged in Calgary, Alta., at a public session of the Royal Commission on Railways and Transportation.

Concluding its sittings there, the commission left for Edmonton where a conference with Premier J. E. Brownlee and members of the provincial Government was held.

Plea for amalgamation of the railway systems was made by Norman F. Priestley, vice-president of the United Farmers of Alberta, with the declaration that the amalgamated system should be operated by the Federal Government as a public utility. Duplication of lines could be avoided and outlying points served with railway connections at less cost.

Mr. Priestley also declared that much debt was charged to the Canadian National Railways without justification and that a large amount of it should be written off, including the expense involved in the co-ordination of the various units of the one system. "Until this is done," he said, "it will be impossible to obtain a true picture of the position of the Canadian National Railways system."

Allan C. Fraser, president of the Calgary Board of Trade, submitted arguments in favor of a national highway commission to control and regulate passenger and freight bus traffic in Canada. With such form of transportation here to stay, it was the duty of the Government to establish proper regulations governing it.

Nationalization of 1,000 miles of railroad between Winnipeg and North Bay and the operation of it by the government as a free road was suggested to the royal commission in a memorandum submitted by Senator W. H. Sharpe, of Winnipeg.

This step, Senator Sharpe said, would remove from the railroads the burden of operation over the long stretch of unproductive territory in northern Ontario. It would enable Eastern Canada to lay its goods down in Western Canada with freight charges comparable to those paid in the United States and would greatly facilitate the movement of goods from Western Canada to the East. Among other things it would make possible shipment of Alberta coal to Ontario.

Amalgamation of the two principal railway systems is opposed by the government of Manitoba, in a submission to the Royal Commission on Railways in Winnipeg, last week. Hon. W. J. Major, for the government, said Manitoba was against any form of amalgamation not entirely controlled by the government and in the present circumstances was opposed to a government monopoly.

The railway problem, the government submitted, should be studied from the point of view of the immediate economies necessary to meet conditions of depression and with regard to permanent policy. The two should be kept separate and no permanent policy should be based on present conditions which were temporary.

Losses being suffered by the railways were largely due to the operation of uneconomic sections, the government brief stated. These sections were in Eastern Canada and British Columbia, none in Manitoba. The solution might be the closing up of these lines.

If such a policy were adopted the lines eliminated would be: "(a) Either the former National Transcontinental line from Superior Junction to Quebec City or the former Canadian Northern line from Port Arthur to Parry Sound; (b) either the National Transcontinental line or the Intercolonial from Quebec City to New Brunswick: (c) either the line from Mount Robson to Vancouver or the line from Mount Robson to Prince Rupert; (d) one of the four lines between Montreal and Ottawa; (e) one of the two C.P.R. lines between Montreal and Toronto."

While believing in the principle of public ownership the Government is in favor of applying it with discrimination. It believes the best results will be obtained by continuing the Canadian National as a publicly-owned line and the Canadian Pacific as privately owned.

The situation would right itself in a few years. Construction had gone ahead of population and traffic, but with further growth there would be traffic enough to make all lines profitable.

Other points in the Government's presentation were: Motor transport should be regulated but not throttled; Canadian National capitalization should be written down; success of railways depends on development of natural resources and nothing should be done to hamper this.

Allegheny Advisory Board

The regular meeting of the Allegheny Regional Shippers Advisory Board was held at Pittsburgh, Pa., on December 16. The commodity committees, expecting numerous changes, both increases and decreases, present figures showing a total probable reduction of about 10 per cent in the volume of carload freight in the first quarter of 1932 as compared with 1931.

Increases are predicted as follows: Grain, 10.4 per cent; flour, etc., 7.4 per cent; fresh fruits, 22.7; potatoes, 33.0; live stock, 9.3; petroleum, etc., 11.1.

Coal and coke will probably fall off 9.7 per cent; gravel, sand, etc., 34 per cent; lumber, etc., 16.9; iron and steel, 11.9; machinery and boilers, 21.3; cement, 11.1; brick and clay, 15.0; automobiles and parts, 18.9; fertilizer, 23.2; canned goods, 6.0.

A special committee was appointed to see about establishing a committee on freight loss and damage prevention. It was the sense of the meeting that quarterly questionnaires should include inquiry as to the amount of freight likely to move by trucks as well as that expected to go by rail.

Charles Donley, United States Potters Association, Pittsburgh, was re-elected general chairman. The next meeting of the board is to be held at Pittsburgh on March 17.

Foresees Vast Freight Service Improvement

(Continued from page 994)

destined to suffer a calamity. On the contrary, I believe its future utility will be far greater than at present, especially with the certainty that in time there will be established upon all of the railroads universal store-door collection and delivery. The field for the truck, supplemented by its possibilities in connection with the use of containers and the transportation by rail of loaded detachable truck bodies, presents almost limitless opportunities of a perfectly sound economic character.

"My conviction is that as far as rates

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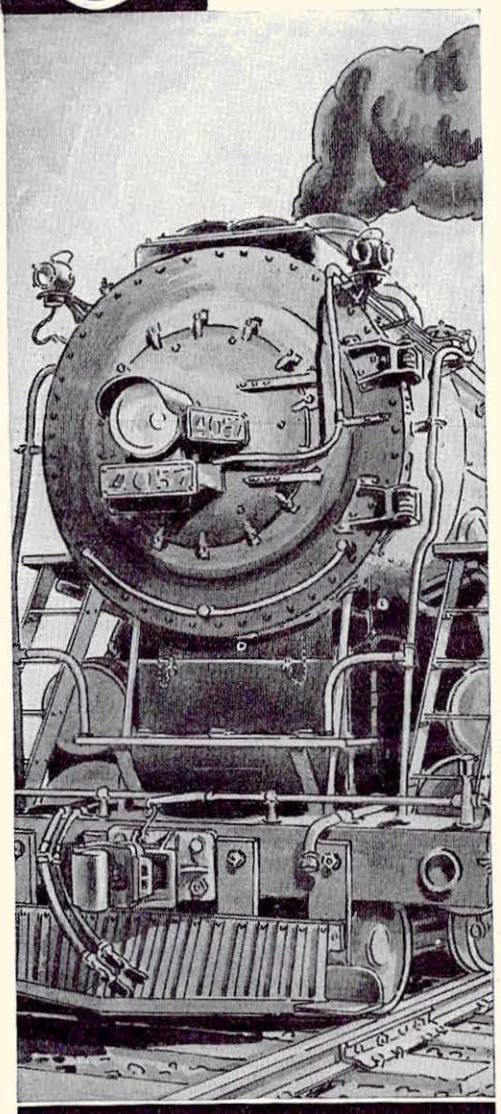
LOCOMOTIVES are employing modern alloy steels and irons in ever-increasing quantity.

Rods, axles and pins have long been accepted applications for alloy steels. But progressive roads have not stopped there. Alloy irons and steels are enabling them to combat corrosion in staybolts, tubes and firebox sheets; to lighten weight by using stronger materials; to employ higher pressures safely.

Even now the possibilities have scarcely been scratched.

The future holds forth the increasing use of heat-resisting alloys for tubes and sheets; of alloy steel boiler shells; of wearing surfaces with a hardness and toughness that will give far longer life and reduced maintenance.

Keep informed on alloy steel and iron developments. Consult Republic metallurgists on new applications.



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are concerned, the railroads will be able to meet the competition which trucks can offer, outside those fields in which trucks possess genuine advantages in economy of operation, namely, terminal zones and short distance hauls. One of the appealing features of truck service is speed of delivery on hauls of considerable length. For example, at present, between such distances as separate Pittsburgh from New York, trucks are enabled to furnish door-to-door delivery in about eighteen hours. Between New York and Chicago deliveries are effected in about forty hours. The railroads, as we all know, are not at present meeting this, and could not do so immediately, as their service is now organized.

"The railroads, however, have a great inherent and fundamental advantage. Freight trains can be made to run on just as fast schedules as passenger trains, if sufficiently attractive inducement to do so arises, it being entirely practicable to equip freight cars with trucks of the passenger type. In my opinion, the required inducement for high freight train speeds will make its appearance with the restoration of anything like satisfactory prosperity in general business, and the offering, once more, of an approximately normal volume of traffic. We shall be in a new and progressive era, and with the demonstration that by co-ordinated truck and train hauls, expedited door-to-door freight service can be rendered at higher speeds, and with greater dependability, than are possible with the truck alone, the public will demand and will be willing to pay for such a service.

"Public interest and the sound economic development of transportation urgently require that federal regulation be extended to embrace service by water between any and all of our ports, whether located upon the oceans, the tidal rivers, the inland waterways or the Great Lakes. All common carriers by ship or barge should file and adhere to tariffs, the same as railroads, and the permissible rates should not be less than are reasonably remunerative. The railroads should be restored to their natural right to participate in coastal and Great Lakes shipping, which was taken from them by the Panama Canal Act. They should be freed from the restrictions of the Denison Act, which bar them from the inland waterways. The government should get out of the barge business on the inland waterways, and amend the Denison Act so that its barge lines could be offered for sale to the railroads."

FOUR HUNDRED AND SIXTY-FIVE SLEEPING CARS were scheduled to leave New York on the Pennsylvania on Wednesday, December 23, a number more than 50 per cent above the regular sleeping car movement. This is said to be the largest record of extra sleepers ever made at this station for the Christmas season. The engagements for Thursday, the twenty-fourth, were only slightly lower. On both days second sections were added to a large number of trains. Movement from the west and south into New York was expected to be equally heavy.

Equipment and Supplies

FREIGHT CARS

THE CHICAGO GREAT WESTERN is reported to have placed an order for 1,200 tons of car material for repair parts to 500 freight cars, with builders in the western district.

Supply Trade

W. H. Woodin, president of the **American Car & Foundry Company,** New York, has been elected president also of the **American Car & Foundry Motors Company,** to succeed C. S. Sale, resigned.

The Barber Asphalt Company on January 1 will move the headquarters of **W. J. Schlacks,** special railroad representative, from 722 Chestnut street, St. Louis, Mo., to 7 South Dearborn street, Chicago.

J. E. Schabo, for the past four years with the Binks Manufacturing Company, Chicago, and previous to that for many years with the DuPont organization, has been appointed secretary of the **Modern Supply Company,** Chicago, representatives of a number of companies handling railroad and industrial painting and finishing materials.

D. B. Bullard, mechanical engineer, **J. W. Bray,** sales manager, and **L. S. Horner,** a new member of the **Bullard Company,** Bridgeport, Conn., have been appointed vice-presidents in charge of engineering, sales and business promotion, respectively. **E. C. Bullard** retains the position of vice-president and general manager to which he was recently appointed, and **E. P. Blanchard** has been appointed sales manager. Mr. Horner is also a director of the Niles-Bement-Pond Company, the Crocker Wheeler Electrical Manufacturing Company, the Acme Wire Company, the Burden Iron Company, and the Trucktor Corporation.

Philip L. Maury, vice-president of Valentine & Company, at New York, has resigned and has been elected president of the **Arco Company,** Cleveland, Ohio. S. D. Wise, president of the Arco Company since 1901 and S. D. Weil, vice-president having retired. Mr. Maury has had a long experience in the paint industry having been connected with the Sherwin-Williams Company, at Cleveland, as manager of general industrial railway and marine sales and then as vice-president and general sales manager of the Detroit Graphite Company, Detroit, Mich., until that company was merged with Valentine & Company when he became vice-president of the last named company at New York.

Construction

ERIE.—The reconstruction of the railroad bridge carrying the Erie tracks over the Central Valley-Turners county highway in Woodbury, N. Y., has been ordered by the Public Service Commission of New York, as has the reconstruction of the highway bridge carrying the Middletown-Bloomingburg state highway over the Erie Railroad in Wallkill, N. Y.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—The St. Louis, Mo., Board of Public Service will receive bids on January 19 for construction of reinforced concrete foundation piers, abutments and retaining walls and grading for the St. Louis Union Station approach to the municipal bridge. On the same date bids will also be taken on about $225,000 of oak ties and southern pine timber for use in the construction of various approaches to the municipal bridge and for replacements on the bridge.

* * *

CAN YOU IMAGINE SUCH A CONDITION?

A fast freight or passenger train comes thundering down the highway and it is all you can do to swerve your car out of its path.

With a swish it is gone, leaving you with bitter thoughts toward railroads and a government which permits such things.

A ridiculous picture? Yes,—and impossible, because railroad trains, unlike trucks and busses, must have rails to run on and an army of workers to keep them in good condition, and railroads must pay all the maintenance costs of their roadways.

Yet these other means of transportation use the highways for commercial purposes and YOU—along with the railroads—help support them by paying taxes for the maintenance of public highways.

The railroads are public carriers and operate with every consideration for your comfort and safety, but they are also business enterprises and are entitled to earn a fair profit for those who own them. You are probably one of the owners, at least indirectly, because railroad securities are held by insurance companies, financial and charitable institutions and very often form the nucleus of trust funds.

The railroads are not earning a reasonable profit. The law permits them to earn a fair return on the value of their property, and the Interstate Commerce Commission has fixed this at 5½%. The actual rate of return of class one railroads for the first nine months of 1931 was 2.08%.

The number of passengers carried in 1930 was less than in 1902, although the population of the United States has increased 50%. The present volume of freight traffic is approximately the same as it was fifteen years ago.

The railroads are struggling with an economic condition that may prove ruinous to them and to those institutions whose interests are bound up in their welfare.

The Railroads Must Earn To Spend

What can be done to relieve this situation? Legislative measures must be passed that will deal fairly with the railroads. They are the backbone of the Nation's transportation system and must be brought from unfair taxation and regulation, back to a sound financial basis. You can cooperate by helping them procure legislative relief. A quicker help is to ship by train and travel on the steam railroads.

L-7

LOUISVILLE & NASHVILLE R.R

An Advertisement Being Run by the L.&N. in Newspapers Published Along Its Lines

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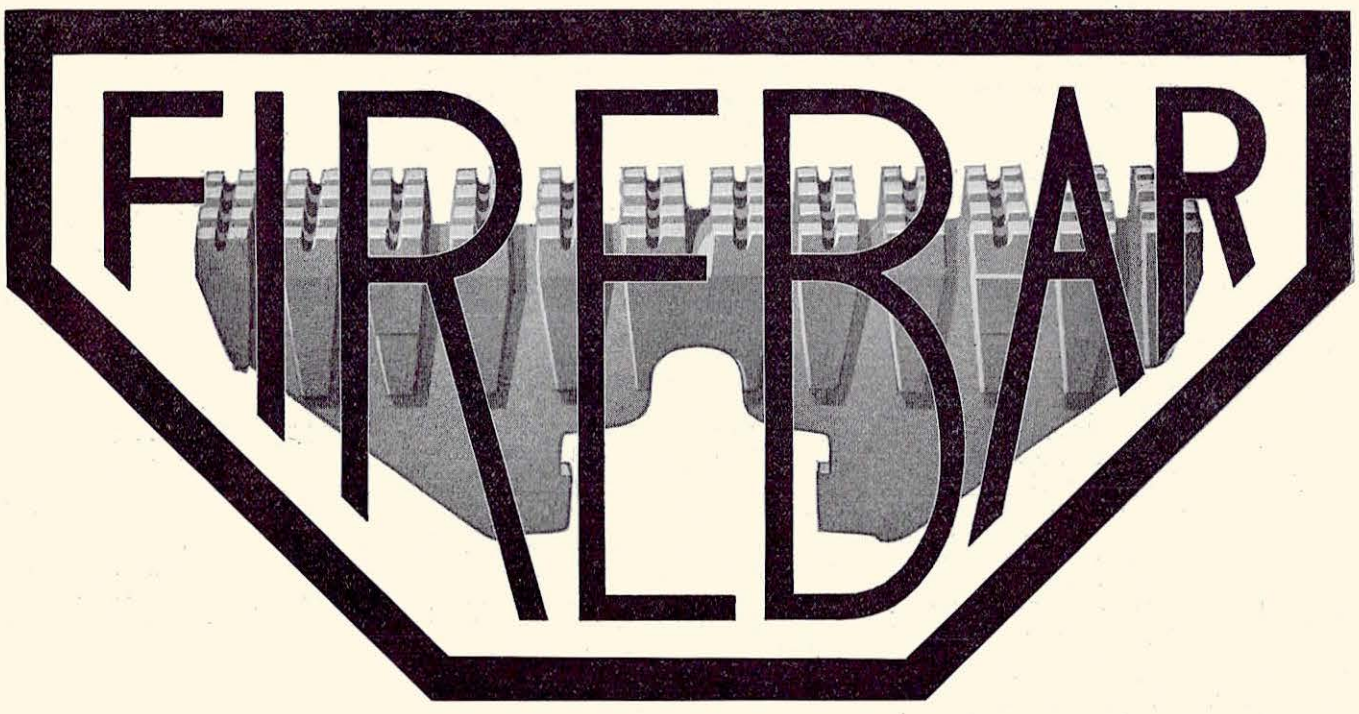

BETTER FIRES

FIREBAR CORPORATION
CLEVELAND OHIO.

Financial

ALABAMA GREAT SOUTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized the authentication and delivery of $500,000 of first consolidated mortgage 5 per cent series A bonds in partial compensation for capital expenditures.

BURLINGTON-ROCK ISLAND.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Hillsboro, Tex., to Cleburne, 29.89 miles, saying that it has been operated for several years at a loss of $25,000 a year.

CENTRAL OF GEORGIA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $11,110,000 of refunding and general mortgage 5 per cent bonds as collateral for short-term notes.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Allocation to B. & O. System Opposed.*—This company and the Southern and Louisville & Nashville, that jointly control it, have filed with the Interstate Commerce Commission a petition for leave to intervene in the proceedings on the four-system plan for the grouping of the eastern railroads. The petition protests against the allocation of the Monon to the Baltimore & Ohio system as proposed in the four-system plan and urges also that the commission's plan be changed to allocate it jointly to the proposed Atlantic Coast Line and Southern systems. The commission plan allocated a one-half interest to the B. & O. and a one-fourth interest each to the A. C. L. and Southern systems.

DELAWARE & HUDSON.—*Four-System Plan Opposed.*—Opposition to the four-system plan of grouping the eastern railroads was expressed in an intervening petition filed with the Interstate Commerce Commission by the Delaware & Hudson, which, in the plan, is allocated jointly to the four systems. The petition states that the company has not made or received any offer for its property and that it desires to continue its operation as an independent line. In normal times, it said, if its stockholders should desire to sell, it has many connections which might be interested in acquiring it but an order which on its face would seem to require it to dispose of all its property and business to a prescribed single combination of corporations would be in substantial restraint of trade and would in effect constitute a cloud upon its title and materially impair its value. The four-system plan was declared to be neither wise nor practicable nor in the interest of the public and the commission was asked to dismiss it as not complying with the law.

DETROIT & MACKINAC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $500,000 of mortgage bonds and to pledge and repledge them as security for short term notes until the end of 1933.

FONDA, JOHNSTOWN & GLOVERSVILLE.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue 60 promissory notes aggregating $86,437 in connection with the purchase of five high-speed interurban cars.

NEW YORK CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $100,000,000 of refunding and improvement mortgage bonds, Series C, to be pledged and repledged as collateral for short-term notes.

NORTHEAST OKLAHOMA.—*Control.*—The Interstate Commerce Commission has denied the application of the Missouri Pacific for authority to acquire control of this company by the purchase of capital stock.

PACIFIC GREAT EASTERN.—*Negotiations for Sale.*—Negotiations for the sale of the Pacific Great Eastern (owned by the Province of British Columbia) have been proceeding at Victoria, B. C., during the last few days between the Provincial Cabinet and representatives of American capital. Cabinet ministers admitted that they had hopes of consummating this deal with H. I. Jamieson, of Seattle, Wash., who has spent a great deal of time lately in private consultation with the Cabinet. So many plans for the sale of the P.G.E. have been advanced in the last few years and collapsed that the government is cautious in anticipating success. In the past most of the interests which have made a bid for the railway have asked for a government guarantee of bonds to cover the extension of the line northward to the Peace River country. This has been the rock on which all previous negotiations have foundered. The government has refused to make any guarantee. The government feels that if it has to underwrite construction it might as well do the work itself and it insists that the provision of a Peace River railway is a national and not a provincial matter.

TEXAS & NEW ORLEANS.—*Abandonment.*—The Interstate Commerce Commission has authorized the San Antonio & Aransas Pass and the Texas & New Orleans to abandon a portion of a branch line between Gonzales, Tex., and Luling, 19.1 miles.

Dividends Declared

Baltimore & Ohio.—Common dividend omitted; Preferred, $1.00, quarterly, payable March 1 to holders of record January 16.

Buffalo & Susquehanna.—Common, 4 per cent; Preferred, 2 per cent, semi-annually, both payable December 30 to holders of record December 19.

Chicago Great Western.—Preferred, 50c, payable January 20 to holders of record January 7.

Kansas City Southern.—Preferred, 1 per cent, quarterly, payable January 15 to holders of record December 31.

Missouri-Kansas-Texas.—Preferred A, no action taken.

Toronto, Hamilton & Buffalo.—$3.00, semi-annually, payable December 31 to holders of record December 28.

Average Prices of Stocks and of Bonds

	Dec. 22	Last week	Last year
Average price of 20 representative railway stocks..	32.82	30.48	81.31
Average price of 20 representative railway bonds..	66.61	60.04	91.63

Railway Officers

EXECUTIVE

Lyman Delano, executive vice-president of the Atlantic Coast Line, has been elected chairman of the board of directors to succeed the late **Henry Walters.**

C. J. Stephenson, assistant to general manager of the St. Louis-San Francisco, with headquarters at Springfield, Mo., has been promoted to vice-president and general superintendent of the Texas Lines of the Frisco, which includes the St. Louis, San Francisco & Texas, and the Fort Worth & Rio Grande. Mr. Stephenson succeeds **O. H. McCarty,** deceased. **C. P. King,** chief clerk to general manager, has been promoted to assistant to general manager at Springfield to succeed Mr. Stephenson.

FINANCIAL, LEGAL AND ACCOUNTING

T. A. Ward, assistant freight claim agent of the New York Central, has been appointed freight claim agent, with headquarters at Buffalo, N. Y., and **C. J. Conklin,** assistant to freight claim agent, has been appointed assistant freight claim agent, with headquarters at New York.

TRAFFIC

H. Easterday, perishable agent for the New York, Chicago & St. Louis, at New York, has been promoted to general agent, at San Francisco, Cal., succeeding **F. H. Stocker,** who has retired. These changes will become effective on January 1.

S. K. Burke, assistant general industrial agent, Southern Pacific, with headquarters at San Francisco, Cal., has been promoted to assistant to general freight traffic manager at the same point, succeeding **W. W. Hale,** promoted to freight traffic manager at Portland, Ore., where he succeeds **J. H. Mulchay,** appointed assistant to general freight traffic manager at San Francisco. These appointments become effective January 1.

W. C. Maxwell, vice-president in charge of traffic of the Wabash, has been appointed chief traffic officer, with headquarters as before at St. Louis, Mo. **C. H. Stinson,** freight traffic manager, at St. Louis, has been promoted to general freight traffic manager, succeeding **Sidney King,** who has been appointed freight traffic manager, with the same headquarters, to succeed Mr. Stinson. **D. E. Gilbert,** senior assistant freight traffic manager, with headquarters at St. Louis, has been appointed assistant general freight agent, with headquarters at Toledo, Ohio, succeeding **G. C. Knicker-**

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Greetings

We take this occasion to express our sincerest wishes to all for a

Merry Christmas

and a

Happy New Year

HUNT-SPILLER MFG. CORPORATION

J. G. Platt, Pres. & Gen. Mgr. V. W. Ellet, Vice-President

Office & Works

383 Dorchester Ave. South Boston, 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 997 Aqueduct St., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

bocker, who has been assigned to other duties. **Phillip L. Johnson,** assistant freight traffic manager at St. Louis, has been appointed general agent at Houston, Tex.

Charles H. Morrill, traffic manager for the Pacific Coast territory of the St. Louis-San Francisco, with offices at Los Angeles, Cal., San Francisco, and Seattle, Wash., will retire from active service on January 1, having reached the age of 70 years, and the position of traffic manager of this territory will be abolished. **W. H. Brewer,** chief clerk in the Denver (Colo.) traffic office of the Frisco has been promoted to general agent at Seattle, Wash., to succeed **E. F. LeFaivre,** who has been transferred to Los Angeles. The position of general agent at Los Angeles is a newly-created one. **Roy Pierce,** traveling freight and passenger agent at Cleveland, Ohio, has been promoted to general agent at that point, to succeed **T. W. Bennett,** who has been transferred to Pittsburgh, Pa., where he succeeds **O. M. Conley,** who will retire on January 1. **L. W. Price,** general agent at Oklahoma City, Okla., will also retire, effective January 1.

MOTOR TRANSPORT

F. J. Burns has been appointed assistant superintendent of transportation of the Pacific Greyhound Lines, with headquarters at Portland, Ore.

OBITUARY

O. H. McCarty, vice-president and general superintendent of the Ft. Worth & Rio Grande, with headquarters at Ft. Worth, Tex., died on December 17, at his home at that point, of a heart attack.

Arthur L. Eidemiller, advertising agent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, died at the Washington Boulevard hospital in that city on December 16 of heart disease.

William Henry Rosevear, formerly general car accountant of the Grand Trunk and active in railway affairs in the Dominion for many years, died at St. Lambert, Montreal, last week, having attained the age of 94 years. Mr. Rosevear was born in Bodmin, Cornwell, England, on September 26, 1837, and came to Canada in 1854 under contract to the old Great Western Railway at Hamilton, Ont., and a few years later he became the mechanical accountant of that railway. In 1862 he was transferred to Montreal as mechanical accountant of the Grand Trunk of Canada. In 1890 he was appointed car accountant and in 1896 general car accountant of the Grand Trunk System, which position he occupied until December 31, 1907, on which date he retired on pension.

Charles H. Koyl, engineer of water service of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, died on December 18, of bronchial pneumonia, at the St. Francis hospital, Evanston, Ill. Mr. Koyl had been a student of the treatment of water for railroad use since about 1900, and was the designer of some of the first railroad water-treating plants to be constructed in this country. He was prominent as a writer of technical articles pertaining to this subject. Mr. Koyl was born on August 14, 1855, at Amherstburg, Ont., and graduated from Victoria College, Cobourg, Ont., in 1877. From 1881 to 1883 he attended Johns Hopkins University as a fellow in physics, later serving as a professor of physics at Swarthmore College. Mr. Koyl engaged in consulting engineering work in New York City from 1890 to 1909. In 1912 he was engaged by James J. Hill to in-

Charles H. Koyl

augurate a water-treating program on the Great Northern and served this road as engineer of water service, with headquarters at St. Paul, Minn., until January 1, 1920, when he entered the service of the Milwaukee as engineer of water service, with headquarters at Chicago. He held the latter position until his death.

George E. Ellis, secretary of the Committee on Automatic Train Control of the American Railway Association, with office at Washington, D. C., died at Washington on December 17 after a brief illness. Mr. Ellis was born at Fairhaven, Mass., on January 13, 1870. He was graduated from Renssalaer Polytechnic Institute in 1892 and entered railway service the same year as signal inspector on the Hudson river division of the New York Central & Hudson River. From 1898 to 1900 he was assistant superintendent of signals on the Mohawk division of the same road and superintendent of the Hudson River Bridge Company. He was later signal engineer of the Standard Signal Company, western agent of the Pneumatic Signal Company and assistant chief engineer of the General Railway Signal Company. From 1904 to 1908 he was signal engineer of the Chicago, Rock Island & Pacific, after which he became manager of installation for the Federal Signal Company. In 1909 and 1910 he was with the Hayes Track Appliance Company and after five years as signal engineer of the Kansas City Terminal he became senior signal engineer in the Bureau of Safety of the Interstate Com-

George E. Ellis

merce Commission in 1915. He remained in this position for five years and also served in 1919 and 1920 as executive secretary of the Automatic Train Control Committee of the U. S. Railroad Administration. After the expiration of federal control he was for a time chief engineer, foreign department, of the Regan Safety Devices Company. In November, 1920 he was appointed to the office which he held at the time of his death.

* * *

Courtesy Swiss Federal Railroads

Clearing Snow in the Lonza Gorge, Between Gampel and Goppenstein, Swiss Federal Railroads

The Charles A. Coffin Medal Won by The Milwaukee Electric Railway & Light Company

For Distinguished Service!

Two First Awards for Development and Efficiency Won by Systems Equipped with Goodyear All-Weather Tread Tires

The 1931 winners of two most coveted national awards — the Charles A. Coffin Medal for Distinguished Contribution to the Development of Electric Transportation, and the Bus Transportation Maintenance First Award in Class B City Operation — both rely on Goodyear Bus Tires.

The Milwaukee Electric Railway and Light Company, operating 169 buses over 887 miles of route, receives the Charles A. Coffin Medal as a signal citation for advances which promote public convenience and redound to the benefit of the industry. Most of its motor coaches are equipped with Goodyear Bus Tires.

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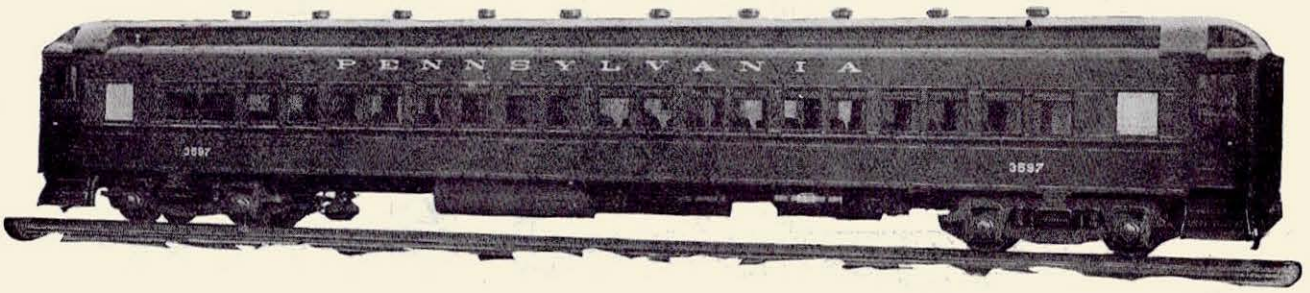

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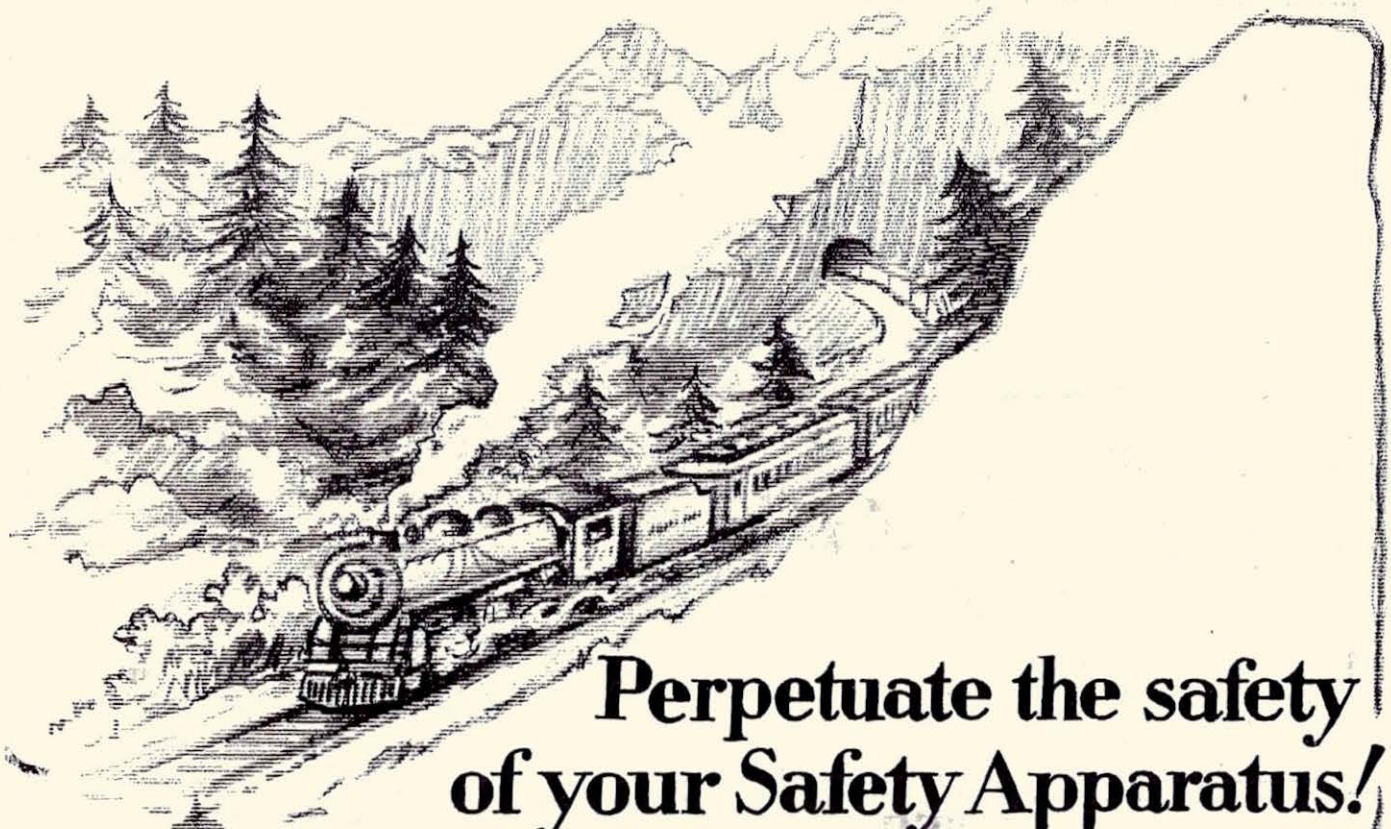

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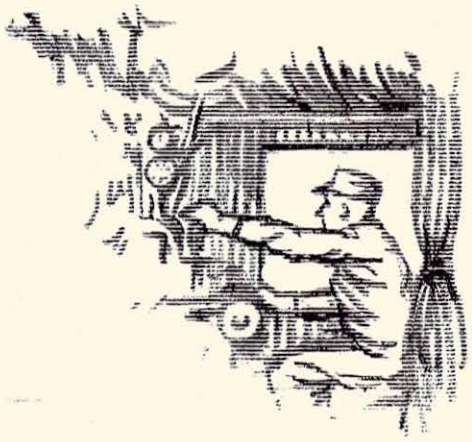

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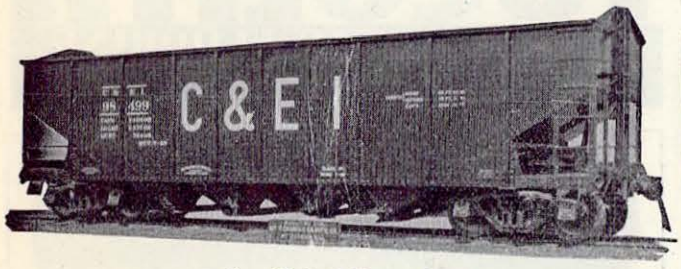

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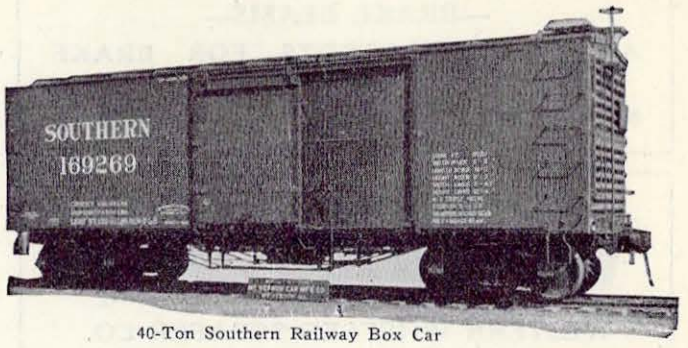

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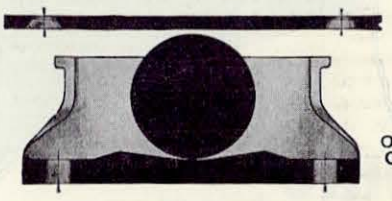

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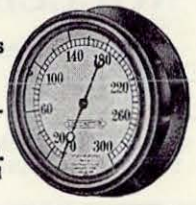

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Total weight	403,000 lb.
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Total length	77 ft.
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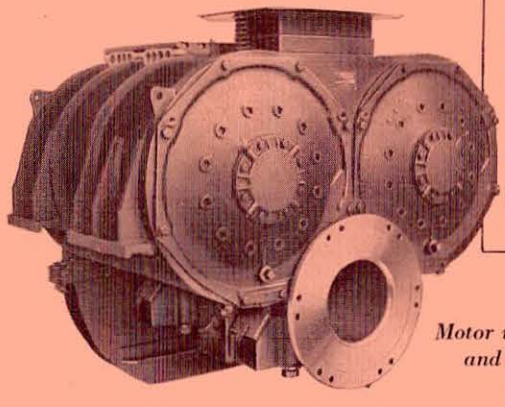
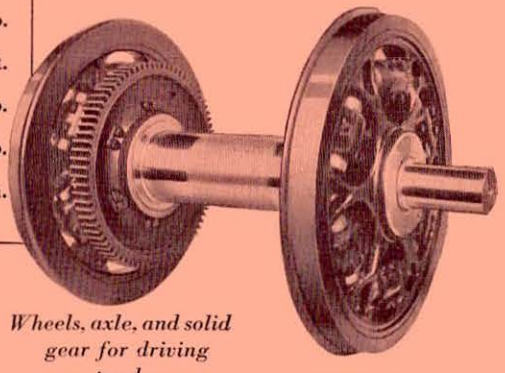


Motor with 12-pole stators and multiple-wound armatures



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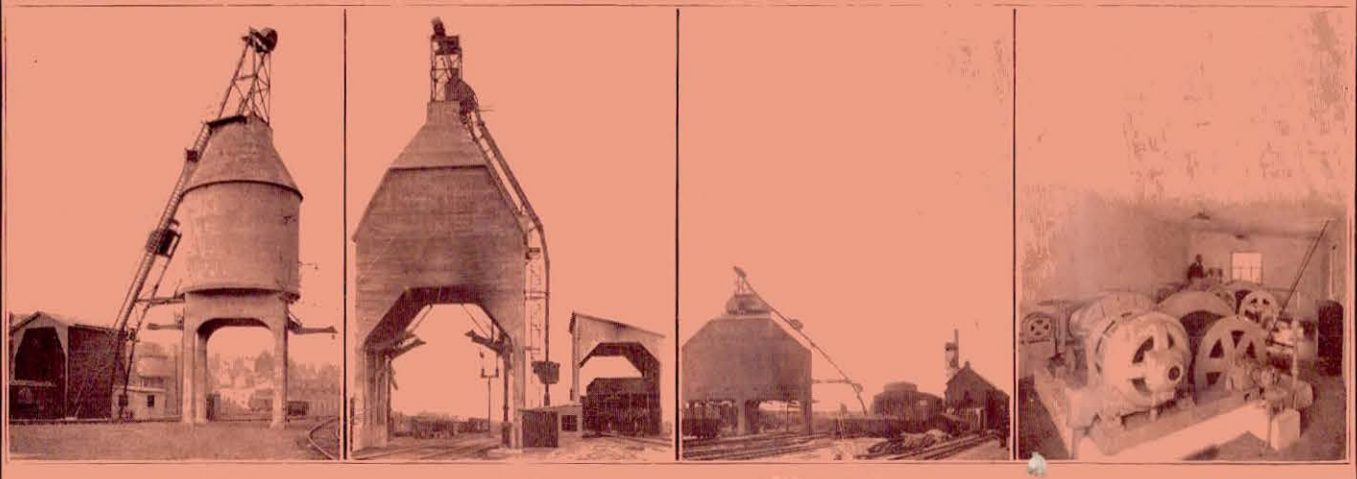

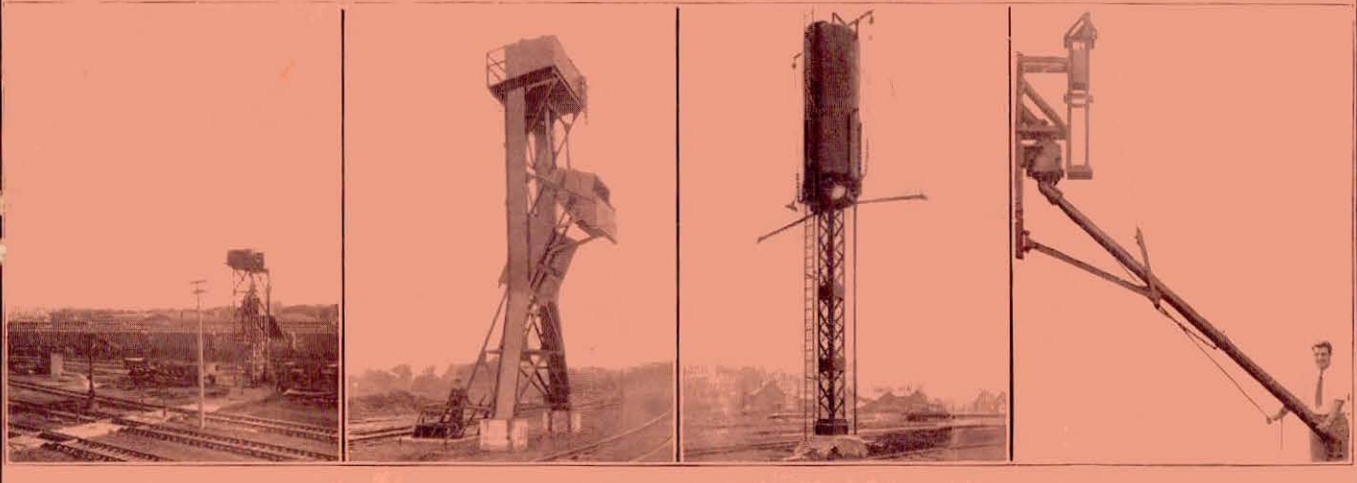

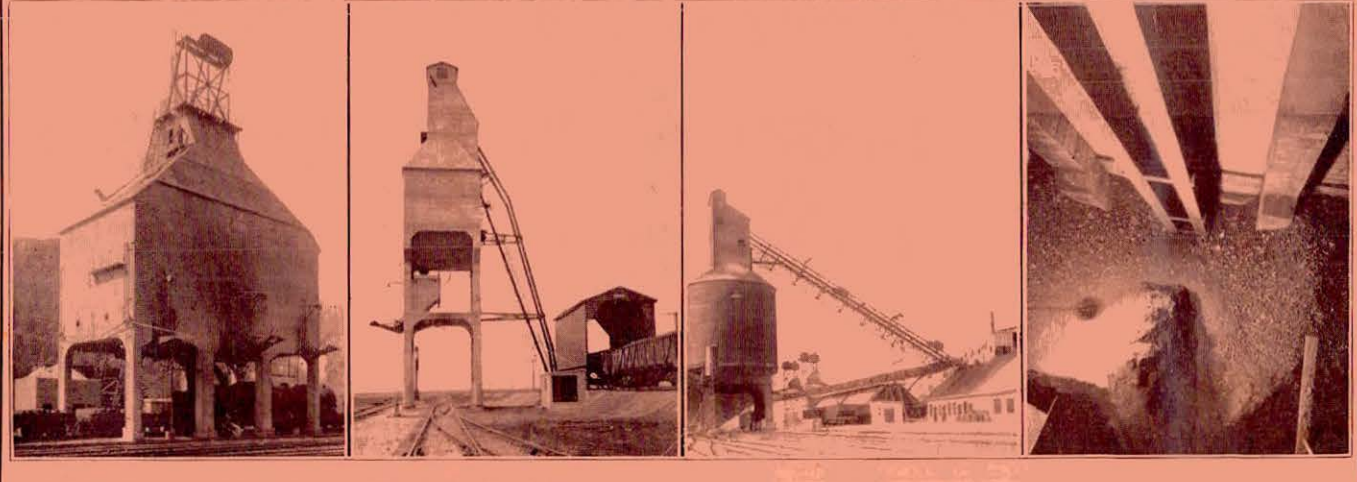

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